The Builder.

VOL. XVII.—No. 834.

Fall of Houses: Kentish-town, &c.—Close of the Inquiry at the Polytechnic Institution.

FRESH accidents in connection with building and constructional arrangement follow each other with such rapidity that the public may well feel alarmed, and ask who is to blame. The frightful occurrences in the Victoria Theatre, London, and the theatre at Glasgow, and the fall of houses in two places in Liverpool, killing six persons, are recent events; while the inquiry into the fatal and costly disaster at the London Polytechnic Institution had not terminated when four men were seriously injured by the fall of a parapet at Wandsworth, and three masons were killed at Kinder, near Hayfield, in Derbyshire, by the falling of part of a gable-wall of a new building, at the print-works belonging to Mr. Aspinall Turner, M.P. It appears, according to a Stockport paper, that the men were at their work when the gable fell with a tremendous crash, "like an avalanche,' and it is noted, as "somewhat remarkable that, only a short time previously to this sad catastrophe, the architect, and another official, had been inspecting the works, and expressed themselves satisfied, both with the progress and security of the building; and yet, in such a short time, three workmen had their lives sacrificed without any warning of the impending danger." Even with this, however, the list of disasters is not complete, for on the 20th inst. a party-wall, of buildings in progress in Kentish-town, fell, injuring three workmen, and knocking down another party-wall in its descent; and a day or two afterwards a flank wall of the same block of houses, separated from the wall that had already fallen by a party-wall still standing, came down, fortunately without injuring any person. Of these last accidents we must give a few particulars. The houses in question form one side of what is to be called Gaisford-street, and are on the right-hand side, going from London, of the Kentish-town-road. They are eight-roomed houses, with rooms in the roof besides, and are in course of erection by Mr. John Stevens, builder, of Castle-terrace, close by. The party-wall that first fell contained the chimneys of the third house from the Kentish-town road: these were gathered over from back to front in the centre, and the men were fixing the pots on the lofty stack when the wall toppled over, in the direction of the chimney breasts, at the level of the two-pair floor, and knocked down in its fall the party-wall of the fourth house from front to back, to the level of the one-pair floor. The brickwork is of much better character than is that of hundreds of similar houses. The mortar, though probably made partly of stuff dug on the spot, is tolerably hard at the bottom; and we were told on the ground, that the work had not been unduly hurried. Looking at it as brickwork alone (and supposing there was no error in proceeding of which we are uninformed), if this wall buttressed with chimney-breasts could not stand, there are scores and scores of houses that should tumble down this afternoon. How many of them stand at all, indeed, is a puzzle! It has been stated that the immediate cause of the accident in question was the vibration of the scaffolding erected around the stack, but we should be disposed to look lower. The foundation has evidently yielded, and that, too, more on the side where the chimney-breasts are than the other. Without having made more than a cursory examination, here we are disposed to think may be found the germ of the disaster. Some workmen on the spot informed us that there was concrete under the wall, and with justness had confidence in the material; but when asked how thick it was, said ten or eleven inches. Such a thickness as this, however useful it may be on a perfectly good bottom to keep down damp, would have no effect in making a weak foundation sound, and may even, by squeezing out, if improperly made or put in, be instrumental in producing failure.

It is very desirable that a careful inquiry should be made into the cause of this accident, and even more desirable that builders should take warning, and in many cases amend their ways, before it be too late.* The manner in which many houses to sell are carried up in the suburbs of London is, as we have often said, perfectly frightful. The risks which are run would seem to render the successful erection of the buildings impossible, and yet they, somehow, are made to stand, to be perpetual sources of expense to those who are heedless and unfortunate enough to buy them. The mortar is formed with mould instead of sand: the bricks are but rotten bats: the turf is scarcely removed for a foundation; and, to make failure more likely, in some neighbourhoods deep holes have first been dug to get out sand for sale and filled in, so as often not to be obvious when building operations are commenced. The district surveyor, often blamed, is for the most part powerless in this respect. The first schedule of the Act says:—"The foundations shall rest on the solid ground, or upon concrete, or upon other solid substructure;" and that every wall "shall be properly bonded and solidly put together with mortar or cement." This is all that the Act says on the point; and unfortunately some of the police magistrates have shown so little willingness to aid the district surveyors to carry out the intention of the Act, that in nine cases out of ten the latter would fail if they took proceedings against a builder in respect of what they considered an insufficient foundation or the use of unsatisfactory materials. The district surveyor objects, requests alteration, begs, prays, threatens: amendment is promised, but nothing is done. Builders of this character—we are speaking only of a particular class—prefer to run the risk of the surveyor halting in his purpose or failing if he proceed, rather than increase their expenditure. The harassment and pain caused to a district surveyor who dislikes to show want of confidence, who fears to injure and oppress, and yet feels the necessity of doing his duty, are greater than can be imagined by those who have not had the experience.

To return now to the current disasters. On Monday last, the inquest on the death of the girl killed by the falling of the staircase at the Polytechnic Institution, was resumed; and, after a discussion as to the propriety of taking further evidence including that of the architect of the building and alterations, the coroner summed up, and the jury found a verdict of "accidental death," also expressing belief that the fall "was occasioned by the cutting for the insertion of the iron trellis-work and brackets, and by the incautious manner of doing the work." They further added, that they could not allow the opportunity to pass "without expressing in the strongest manner their opinion that all public buildings should be subject to a periodical inspection." A competent person, appointed by the Government, should certify to some office, prior to the granting of a license for a building intended for public assemblage, that such building had been erected and finished in all its parts in a manner suitable to the purpose; and the like inspection, certificate, and license, should be necessary upon occasion of all alterations or repairs of importance. The jury also strongly objected "to the almost irresponsible power now vested in the hands of companies and individuals in the erection and maintenance of our public places of resort," and wished "to impress upon the Government the absolute necessity of not allowing the ensuing session of Parliament to pass without some enactment to enforce these suggestions." Such a course they "deemed imperative to allay the fears of the public, in consequence of the accidents that have so frequently taken place," and hoped the coroner would forward the suggestions to the Secretary of State.

It is quite plain that the period has arrived, when without regard to the proprietors of the places of public resort, and the alternative to which they may be driven, of abandoning present sites for others completely isolated, some more stringent control must be exercised than is within the scope of the present Buildings Act, or the office of the Lord Chamberlain. It will have been noticed that the manager of the Victoria Theatre boasts that on the last of the visits (which, it seems, are repeated annually) he was "highly complimented" by the Chamberlain's deputies upon, amongst other things, "the very efficient modes of entry and exit," though, as we have made sufficiently clear, the *width* of the stairs where the accident in the case of the Victoria happened, which seems to have been the subject of praise and self-satisfaction, is really no exemplification of what is needed for the public safety, and may rather be viewed as opposed thereto. Subdivision of the crowds, by *number* of staircases and exit-ways—as widely apart as may be possible—has been dwelt upon by us as the real requirement for facility of egress with better planning of staircases and steps themselves, after further study of that part of the subject. The inefficiency of the present inspection of theatres has been pointed out by us, as with reference to the Pavilion Theatre; and we find that we have brought forward other evils, as the interference with exit-ways provided,—exits which, as Mr. Nelson tells us, have been closed merely that expense of checktakers might be saved.

But the matter of the staircase at the Polytechnic Institution is not particularly connected with that question of planning which we showed needed consideration. The point in the recent case is concerning structural design and security of steps, rather than icnographic arrangement of a staircase, and the proportioning of risers and treads,—though either question may be important in regard to public safety and requirement of inspection. Distinguishing, however, one subject from another, and merely remarking the absence at the Polytechnic of the very requisites which an act might be expected to enforce—the complete fire-proof accesses (now, however, to be provided), we have to draw attention to the assigned causes of the accident as affecting future practice regarding the construction of geometrical stairs.

It will have been observed, that whilst the verdict assigns as the cause, the cutting for the insertion of the trellis-work and its brackets, the professional advisers appear to raise the question whether staircases on the like plan, though of the best construction, should be adopted in any future case. Our opinion as to advantage of substituting a wall or complete enclosure for the ordinary low balusterrail and the open well-hole, in all staircases for theatres or such buildings as the Polytechnic,

* Since this article was in type, we have seen a report on the accident addressed by the district-surveyor, Mr. Henry Baker, to the Metropolitan Board of Works, at their request. Mr. Baker shows that the walls were carried up by a sub-contractor, without waiting for the joists and quarter partitions of the upper floors. "The walls having chimneys, and a badly-constructed scaffold only on one side, had no support or stay on that side for a height of 30 feet or more; the wall, thus built in the winter, and without bond of any kind, broke off at the level of the second floor, and knocked down the upper portion of the next party-wall. The concussion caused the west flank wall to buckle, and the top portion to fall outwards about thirty-six hours afterwards. It was perfectly upright before, but built for two stories and upwards, without timber. I attribute the accident entirely to the carelessness of the workmen, and the want of proper management in the builder. Four houses, precisely similar, have been just covered in, on the opposite side of the same street, but were built with care, and the result may be seen. I am inclined to think, from many instances in old and in new houses, that the old practice of putting return wood-bond into party-walls, faulty as it was, is better than the present practice of putting no bond at all; and I recommend that in any future amended Act, a discretionary power be given to the district surveyor, to allow such bond as may, in his opinion, be an advantage to the structure, without being a detriment in case of fire. Certain houses in Greek-street, now repairing under my superintendence, would, I think, have fallen in spite of every care, but for the quantity of wood-bond I found in them."

is too well known to require further expression of it; though as to *winders*, we may add that those of the staircases in question called by the name, do not appear to have had the disadvantages which we referred to only as in those winders where portions of the treads are too narrow for the length of the foot; whilst with so large a curve, or portion of a cylinder, they might even be considered to offer advantages as compared with straight flights—in which last it is not always easy to avoid defects which there are alike in very long or very short flights. But regarding the structural question,—where geometrical stairs, more especially those winding in a cylinder, are pointed to, as having certain defects of principle, we are reminded of an example of their use, by one who would hardly have adopted them, were they so defective,—we refer to no less an architect than Sir Christopher Wren, who at St. Paul's Cathedral has left a remarkable cylindrical staircase, in which no sign of failure would be likely to be found. Truly, that staircase may not have been used, as it certainly is not adapted, for crowds; but the fact of its existence, added to the statement by Mr. C. H. Smith, that "winders" such as those at the Polytechnic are *stronger* than steps of straight flights, seems opposed to the assertion of Mr. Marsh Nelson, to the effect that a solid foundation is *peculiarly* necessary for cylindrical staircases; and that of Mr. Eales, who says that geometrical staircases, always "subject to vibration," are "*particularly so* where cylindrical." These gentlemen must have been thinking of isolated staircases, in joiners' or iron-fitters' work,—these, of course, are shaky. The real conclusion from the accident at the Polytechnic Institution, does not seem to us this, any more than one adverse to use of geometrical stairs in many cases: the lesson is simply that which should never have been needed, namely, that the integrity of the whole construction of such a staircase depends upon the stability of foundation, whether afforded by one step to another above it (or at the lowest point), and upon the secure pinning-in to the wall—whereby the step can neither fall downwards, nor get shifted at the bird's-mouth joint so as to destroy its office of an abutment to the step below. Given the proper foundation, the proper scantling of stone, the solidity of the wall, and proper execution of the pinning-in and bird's-mouthing (the latter even omitted in small staircases), and there could be no argument against such stairs for any sort of traffic. But, when, on the other hand, landings are introduced, at intervals, not as quarter-paces or half-paces, but supported only along one side and for a considerable length, it is clear that vibration is likely to be great, and must tend to destroy the conditions of security. The joggling of pieces—especially one mode in which joggling is most erroneously performed,—is only an indifferent substitute for the single stone of the required area of the landing; and under any circumstances it is obvious, that by the leverage at the end of the bottom step of a second flight, the strain, vibration, and the consequent strength of the whole of such second flight, must be materially different to the case of a single and lower flight— properly founded. It is the landings, therefore, which may require extraneous contrivance for support. In the Treasury Buildings and Board of Trade, Whitehall, however defective the proportioning of risers and treads, the landings are carefully arranged with iron columns of support; and it appears that at the Polytechnic Institution also, the principal landings are yet carried on iron girders,—though the landings, or stones beside them, which it may be concluded ought to have been similarly borne up, were not so supported, but were in one case only joggled, or in the other, as it turned out, not connected in any way (except with the wall), and thus most likely were the reason of the failure.

It appears there were several sources of weakness in the staircase besides the scantling lessened by wear, and lessened strength by cutting out for insertion of the brackets of the iron-work. All the witnesses seem to have agreed in viewing this iron-work insertion as, though an injudicious proceeding, one operating only to complete the disruption of the stairs, and not the primary cause of the accident. It should, however, never be imitated.

It is only just to Mr. Thomson, the architect, to point out that Mr. Marsh Nelson distinctly says, "From experiments I have made, I consider that the alteration of the staircase was not the cause of the accident;" and again, "The experiments prove that the steps, as altered, would have borne a weight equal to four times what they were required to carry." Mr. Thomson, in a report drawn up immediately after the accident, but not produced at the inquest, attributes the accident to a defect in the top landing, and points to a staircase in Somerset House where the stone has been cut for repair in like manner, and which has stood for more than twenty years.

The evidence as to where the accident began was against Mr. C. H. Smith's opinion, that it was caused by defect in the material of the top landing and the neglect of workmen in the joggling; whilst Mr. Eales, who found also that the landing had not the support from the step below it which had been intended, was constrained to look elsewhere for the origin of the occurrence, that is, to the lower landing,—that from which the flight sprang,—and which was worked off to a feather-edge as well as worn down on the surface, so as to weaken the strength very seriously at the most critical point. Mr. Smith, it did not appear, would have objected to piecing of the treads with stone or iron, though we should say he would have objected to the further cutting of the stone for the brackets required; and it seems that vibration of the whole piece of construction, owing to the springing of the flight from an instable landing, and its termination on one of similar kind, inducing fracture of some step, or that of the lower of the two landings, was the primary cause of the accident. It will have been understood that, whilst each middle landing *of the plan* was perhaps properly supported, the landing we speak of, besides the pinning into the wall, was only attached to the edge of the other, or by the ordinary toothed joggle, being originally weakened by the feather-edging, and subsequently worn and injured in the supporting edge.

There is little doubt, as pointed out by some of our correspondents, that there may be reason for apprehension as to some geometrical staircases which have been planned with wide flights, and scantling of steps neither increased at the wall-hold, as suggested by one correspondent, nor calculated in any way with reference to load to be carried and possible concussions. We incline also to the opinion that geometrical stairs may require to be used less frequently in many buildings, if at all in theatres and places of public amusement. This, however, may not be from inherent defects so much as from the different arrangement of *plan* seen to be required, especially as to disuse of well-holes.

An important question is as to any mode of repairing steps. Portland steps, it is found by this case, are worn away 2 to 3 inches at the front, and landings $\frac{3}{4}$ inch to $1\frac{1}{4}$ inch, in twenty years, by great traffic; and it is difficult to get rid of the slipperiness of granite even by working grooves into it. The iron-work addition, unless *added* to the step and pinned into the wall, can hardly be made without risk of cutting into the step and weakening it more than it was in the worn state. The subject of original material must receive attention, particularly since it is shown that the variable nature of Portland stone itself may occasion unlooked-for disasters.

We ought to add that the coroner, in summing up, said that "with regard to internal alterations, it appeared anything might be done without giving notice to the district surveyor, unless there was an interference with the external walls. Such a state of the law was preposterous. Had there been a clause rendering it compulsory to have given notice with respect to these staircases, the probability was that this accident would not have happened." Now, while admitting the necessity for more complete legislation, it is incumbent on us, for the sake of the future, to point out that this statement is not altogether correct. The floors of the lobbies, corridors, passages, and landings, also the flights of stairs and the roofs and galleries of every public building, to be constructed, are placed by the Building Act, specially within the control of the district surveyor,—a very great responsibility, by the way, without corresponding remuneration. Then, by clause IX. "any *alteration*, addition, or other work made or done for any purpose, except that of necessary repair not affecting the construction of any external or party wall, in, to, or upon any old building," shall "be subject to the regulations of this Act." And as the introduction of the iron treads was unquestionably "an alteration," the builder *was* called on by the Act to give notice to the district surveyor, and was liable to a penalty for not having done so.

GATHERINGS AT MANCHESTER—ARCHITECTURAL AND SANITARY.

A RECENT visit to Manchester has been the means of affording us some particulars of what has been lately done in the town and district, to add to the series of notices which appeared in these pages at the close of 1857, and in the beginning of last year, when the architecture and sanitary arrangements were reported on at some length. The new market-hall, in connection with the market in Smithfield, has been already mentioned;* and the principal warehouse, in Fountain-street, would claim little further commenthan that we made on the design in the Architectural Exhibition of last year. It is a mountain in labour, yet produces no art-effect, but rather deformity, as result. If it be true that some of its originality involved defective construction; that will testify to the importance of remarks on the general subject, which were made in the course of our notices of the Exhibition. The architect of this warehouse has done much better, even in works showing on the face of them by the details, that they are from the same hand. There is much that is commendable in his Jews' Synagogue, now completed, on the Cheetham-hill-road (which we have before named), as for instance in the coloured brickwork, and by the variety and effect in the forms of the windows, and the general grouping of the whole; though so exact an imitation of the Saracenic style we much marvel should have been thought appropriate by the particular sect. The other synagogue, in the same road, not far off, by a different hand, by no means faultless in details (whilst its principal feature, the recessed centre with steps, would be considered common-place), is yet, in some respects, on a better principle of design. In the building in Pall-mall, occupied principally by the offices of the *Examiner and Times*, Mr. Salomons has got rid of the defect which we noticed as pertaining to his window-arches where coupled. In lieu of the merely mitred formation of the arches, moulded or otherwise, at the springing, a regular corbelling in stone projecting as a series of mouldings from a small square shaft between the windows is introduced. This manner of treating the windows, the use of brickwork decoratively with much novelty by the combination of the black with the general dark red bricks, and the range of arches which forms the cornice, give the character to the design. It is, however, inferior to earlier works in the town, which have obviously afforded hints, so far as regards use of recesses for windows of two or more stories arch-headed, and coupling of those recesses—the springing of the two arches in the centre, being from a small column carried on a corbel.

The use of bricks of different colours in patterns,—sometimes along with ornamented tiles, and also with elaborately carved ornament in stone, is observable as a recent characteristic in the architecture of Manchester, not less than in other parts of the country. In Deansgate, near St. Mary's Gate, a long frontage has been occupied by a building containing four or five shops, and three stories above, where considerable effect is sought by the use merely of three-light, or as we might call them, Venetian, windows, having brick piers of 9 inches on the face, and reveals of 18 inches in depth. The piers, in the case of the windows of the second and third stories, have Corinthianesque capitals and bases, in stone, or cement. The spaces between the stories have red, white, and black bricks in patterns, and the lintels are formed with a continuous band of stone,—the windows of the top story, which are somewhat lower than the others, having the capitals omitted. The front finishes with a cornice of plain mouldings, and

* Page 17, *ante*.

a parapet, and with chimneys which correspond with the main piers. These piers are of white bricks, with black bricks towards the top, and red bricks in the middle, in patterns.

The best use of colour, combined with brick-work, however, is made in the exterior of the New Assembly Rooms, by Messrs. Mills and Murgatroyd, in the Cheetham-hill-road, in all respects the most noticeable work of the year in Manchester. The plan provides a large ball-room, a refreshment-room, a card-room, and a reception-room; ladies' and gentlemen's dressing-rooms; a kitchen, and a supper-room, in the basement; entrance-hall, vestibule and ante-room, and a very wide *porte-cochère*, or enclosed porch for carriages, which forms the main feature of the design externally. The building consists of a single story, in red brick, with the mouldings and carved ornament in stone, and coloured tile-work in panels in the frieze. The pilasters or piers of the porch are of brick, with richly carved capitals, and with other ornament on the middle of the shafts, in stone, which material is also employed in archivolts to the arches across the entrances to the carriage-way, and in windows to the front of the porch, in triglyphs introduced over the piers, and in the margins of the tile-work which in circular and oblong panels decorates the frieze, as well as in the mouldings of the cornice and pediment. There is no architrave division to the entablature. The patterns of the tiles were designed for the special purpose: in the oblong panels the colours appear to be buff and brown; but more lively colouring is introduced in the centre of each division of the frieze, in the *pateras* or circular panels. The elements of the design are simple, but the result altogether produced is one of suitableness to the purpose, if not of novelty combined with requisites which are of more importance to proper architectural effect. The decorative plaster-work of the interior is somewhat elaborate, and has evidently been the subject of praiseworthy attention. There may be a slight want of unity about it, as in one of the rooms where naturalistic ornament is found along with ornament modified from the Greek character which appears to have been taken as the general basis; and the ornament in the cornices of the doors, though superior to what is now usual, is inferior to what may be seen in the works of the time of Sir Wm. Chambers and others, when ornamental plaster-work was executed in a manner from which we fear it must be held to have since much degenerated. However, in many respects the design and execution of the work have great merit. In the ball-room, over the main entablature cornice, a series of *lunettes* are introduced, and these are filled with *alto-rilievos* by Mr. John Thomas. The ceiling is divided into three compartments by beams, corresponding with the divisions of the walls which are formed by elaborately enriched pilasters; and each of these compartments contains a circular space, slightly domical, which is covered with figures and ornaments in low relief. There are no windows in the ball-room, and we might say there are none generally in the main portion of the building. Ventilation is provided for. The orchestra in the ball-room is at the side, in a gallery. The flooring is carried by girders, trussed,—as being suitable to a ball-room floor, rather than sleepers and walls.

Amongst the buildings noticeable for colour and eccentricity, as well as for elaboration of carving in some details, is one near the Fish-market, in Victoria-street, by Messrs. Speakman and Charlesworth. Peculiar as are its details, however, there is evidence in them of artistic feeling. We should mention the front of the Clarence Dining-saloon, in Brown-street, as belonging, on account of the details of its door-head and windows, to the productions of the better class. And we should not omit to name some offices in Cross-street, stone fronted, by Mr. Thomas Worthington, having excellent details—though a little minute in character, perhaps. The building is arcaded as to the door and windows of the ground-story, and has a triple window above, with balcony, ironwork filling in between the pedestals, and a bold cornice with consoles. The Halifax stone, here used, is now considered in the locality better than the Huddersfield. The same architect is altering, to order, his work, the Overseers' Offices in Fountain-street. Mr. Ormerod, solicitor, assisted by Mr. James Holden, architect, is completing a building in Princess-street, for offices. It is Elizabethan in style, but calls for no remark except that it is not advancing in its character and tendency. Mr. Holden has now in hand, works of repair and reinstatement to the clerestory of the cathedral—north side; and some kind of decorative work is, we believe, contemplated in the interior. Is the battlemented parapet a reproduction of the old one, which, as we recollect, was horizontal, and perforated in the "perpendicular" manner? It is true that the church had undergone, years ago, some inferior work of restoration. The tower above the level of the roof was taken down some time since; but there is no appearance at present of rebuilding, or yet of removing the lower portion. We believe nothing is conclusively settled; but there is one improvement which should certainly be thought of, namely, the formation of a terrace and steps along the whole of the west end next the road; and it has been suggested, also, that the river should be arched over, and a grand level *plaçe* formed in front, giving space which will be needed by increased traffic to the railway station, and assize courts about to be built. A project has more than once been mooted to arch over the distance from Victoria Bridge to Albert Bridge, and form a central market. The state of the Irwell must not be forgotten, if concealed from view,—a result which seems to have arisen in the case of the Irk and the Medlock from various circumstances.

The present effect of the *rilievos* in the panels of the Wellington monument at Manchester, justifies views on the subject of such works, and the material for sculpture, which we put forth some time since. It would be scarcely possible for labour, whether of sculptor's art, or of mere bronze casting, to fail more completely than in the case of these four panels, of any intended effect. Whatever be concluded as to the admissibility of perspective, there is a total lack of fire and spirit in the compositions—at least, in three of them. Figures of men and horses, and legs of chairs, seem to be standing on nothing. As to the material, it has all the appearance of being in a rapid state of decay.

As to the architecture in the streets of Manchester, there are few towns we imagine, where the realization of effect bears so trifling a proportion to the endeavour, and, indeed, to the merit of the art. The nearly-constant rain; and the general smokiness, produced, perhaps, in some measure, by the kind of coal, and great waste in ordinary house-fires; combine to produce an effectual screen during any such weather as was experienced in Christmas week. As regards the atmosphere, we believe it has been computed that 2,000,000 tons of coal are consumed within Manchester and Salford during twelve months, and that, as one result, a quantity of the strongest sulphuric acid, amounting to 36,000 tons, is formed in the air in the same period. As to the larger contributants to the unsightly and health-destroying nuisance, it may be remarked that often a single chimney gives forth smoke from 120 to 150 tons of coal each week. The increase of boiler-space for requisite supply of steam, which seems to be the only certain means of attaining the different objects, is necessarily in many cases difficult, so that the nuisance either is endured by the town, in place of interference with those operations which provide subsistence for the people, or the employer thinks it better to run risk, and incur fines, than to acquire more ground, and erect more boilers—an alternative that might not be within his power. Copious supply of steam is wanted within short time, and is to be produced even at great sacrifice of fuel. Whether improvements in the production of steam, increasing its power in the same space, will remove the difficulty, we cannot say; but the result seems not unlikely from attention given to that particular subject. Moreover, in time of rain, there is at the outskirts of the town, an appearance of discomfort, from the state of many patches of ground that are neither properly drained, nor covered with buildings rapidly as ground similarly situated would be near London,—whilst the second-rate streets even in the town, are far too frequently left unpaved for long periods. In London, except in Agar-town, or the outskirts of Notting-hill, we do not know where streets—such as we have lately seen in Manchester—could be found. In our suburbs, a good gravel road, with sufficient drainage, is not unusual, even before houses are built: in Manchester, judging from appearances, very commonly nothing is done for years, unless cinders are at hand. It was in the town of Manchester that the effect of good paving on the health of the inhabitants of streets, was at the outset of the sanitary movement conclusively shown; yet we say, in parts of the town itself, the want continues. The authorities should look also to the unguarded state of cellar steps. Strangers risk their lives in passing along some of the principal streets.

The unsatisfactory state of the town and district as regards sewerage, or the disposal of refuse, still prevails. The town-council, afraid of the responsibilities of their position, have always discouraged any other system as to the refuse, than that of storage for a certain time, and removal.* The proceedings in parliamentary committee last year may be recollected, in consequence of which the corporation were prevented from imposing such limitations on the supply of water as would have practically stopped the extension of the closet-system. Their only real argument was from the present state of the streams used as outfall—to which we drew attention in connection with the subject of London drainage. The effect of that present state of affairs may be to force upon the corporation the consideration of the great outfall-question, and possibly the settlement of it for the rest of the kingdom. The peculiar difficulty of Manchester is one, similar to what occurs in the case of nearly every stream in the manufacturing districts, arising from the acquisition of certain water-rights. The chief use of the water to the manufacturers is for condensing in the steam-engines. The *water* of the Medlock, filth as it is, is valuable for this purpose to certain establishments, and is for these only just sufficient in quantity. The corporation, however, are accused by sanitary reformers, of indifference to these questions: but if it be correct, that with their enormous water-supply they are still in difficulty; they may have temporarily some reasons for hesitation, though not for any trifling with the subject. The reformers boldly assert that the Medlock could not be rendered worse than it is at present. We are assured that the peculiar case of the manufacturing districts was not made at all too important in former articles in these columns; and, though the self-purifying process of rivers may go on in the Irwell or the Mersey in the course towards the sea, the sewage deposits at the mouth of the latter river, near Liverpool, in a way which has attracted very serious attention, and has prevented greater use of New Brighton as a place of summer resort.

Without knowing what means it may be necessary to adopt, it is obvious that there are chemical means at present, by which disinfection as well as utilization of sewage-matter can be accomplished. The only point on which proof is needed is that of the cost of the application, including that of the material. It is asserted at Manchester, that some of the figures in Dr. Letheby's report are erroneous, and must have been obtained at second-hand. We shall have another opportunity of considering the merits of disinfecting powders which we have lately spoken of; but we may say we believe the experiments on the large scale at Glasgow are suspended only temporarily, and that Mr. Bateman still looks forward hopefully to one material to afford the means of solving the difficulty in the case in which he and Dr. Anderson were consulted. The success of the application of Smith and McDougall's powder in the stables of Mr. Murray, in Broughton-lane, Manchester, is evident. A considerable number of horses of the highest value are on sale, and certainly animals of greater beauty, or kept in better condition than those in these stables, can scarcely be found. In the stables themselves there is not the slightest smell of manure, or anything else, unless something just perceptible due to the ordinary respiration and perspiration of horses. The liquid drainage from the stables, which is received in a pit, has no stench whatever, even when a large ladleful of the liquid is held close to the nose. The litter from the stables formed a heap perhaps 50 feet by 25 feet, and 4 or 5 feet deep. This, we are told, in its former state was covered with myriads of flies, and was so great a nuisance that certain houses near to it would not let. There was no stench when we saw the heap, and there were no flies; and a pole, driven 3 or 4 feet into it, allowed to remain a few minutes, and brought out again in a moist state, had not the slightest disagreeable smell. These results are obtained at a cost of about 1d. per horse per week. The manure is saleable, and may fetch 10s. a ton. The *rationale* of the chemical agency can be easily demonstrated. It may be sufficient at present to say, that the invention aims at complete disinfection, as well as at preservation of the valuable constituents of sewage and manure for their application to agriculture. Dilution of the sewage, such as there is in the case of London, will occasion no chemical difficulties as to disinfection; though the dilution necessarily lessens the commercial value, and interposes difficulties as to the management of so large a volume of water.

* The injurious consequences to health of the night-soil men are, we believe, admitted, whilst the men are not generally hard drinkers.

ROYAL ACADEMY LECTURES ON ARCHITECTURE.

MR. G. G. SCOTT ON THE ARCHITECTURE OF THE THIRTEENTH CENTURY.*

IN the two lectures I delivered during the last session, my object was to trace out the development of Pointed architecture from the Romanesque nucleus of the preceding age,—to show how far this was the result of constructional necessities and the natural progression of art, and how far it was aided and furthered by external influences; and to illustrate the unity and grandeur of the artistic movement, which in so short a time generated an art at once so original and so truly noble. My object on the present occasion will be to give a general sketch of that art when it had arrived at its culminating point, or rather during that wonderful century through which it reigned triumphant, rejoicing in the full attainment of the object of its strivings, and, proceeding from strength to strength, and from beauty to beauty, filled the countries of Western Europe with creations at once new to art, and in many respects nobler than anything the world had previously seen.

Though it is convenient to classify our Mediæval architecture under the heads of centuries, its points of change do not in reality coincide with such a division. It would, perhaps, be nearer to the fact if we classed the last quarter in each century with that which follows: thus, in this country the Norman style would be supposed, roughly speaking, to occupy the interval between 1075 and 1175;—the Early Pointed style from thence to 1275;—the Middle or Decorated periods from 1275 to 1375; and so on.

On this view of the case a great deal of what I treated of in my last lecture belongs artistically to the present one, and a portion of what I am embracing under the head of the thirteenth century would better go with the fourteenth century. As, however, I should wish to be as comprehensive as possible in defining the period of the unimpaired integrity of the style, I gladly extend it to the very end of the century, and will not quarrel with those who would dip a little into the succeeding one; for though I prefer the strength and boldness of the works of the earlier part of the century, the style can hardly be regarded as complete if deprived of the more delicate productions which characterise its close.

In my last lecture I showed how, both in France and England, the last quarter of the twelfth century was occupied in bringing the earlier phase of Pointed architecture from a state of mere transition to one of full development and consistency, and how that the works of this period of especial earnestness in onward striding are characterised by a masculine vigour scarcely equalled at any other stage. We have now to view the Early Pointed style at the period of the full attainment of its aims, and when its endeavours were rather to amplify and to extend its means than to construct a style.

The thirteenth century commenced under the most favourable auspices for the development of the newly-created architecture. In France, both the secular and the ecclesiastical powers were in the highest state of prosperity; and if in England such was not the case with the Crown, and we were checked by a bad and mean-spirited king, it is clear that both the barons and the Church were in a state of high prosperity; for, from the very opening of the century, we find works on the grandest scale to have been everywhere undertaken. Whether in the castle, the palace, the cathedral, the monastery, or the parish church, we find the newly-developed style to have been put largely into practice; so that scarcely a building of note fails to show the impress of the youthful art. Every great church must have its share of it: thus at Canterbury, though they had just completed the eastern half in the style of the transition, the cloisters were added in the perfected manner. At York, again, the choir had been rebuilt in the last half of the preceding century; but the perfected style must have its sway, so the Norman transepts were rebuilt in it. At Lincoln, the transformation of style had commenced, under St. Hugh, before the close of the twelfth century, and before 1280 but small vestiges of the Norman structure remained. At Ely, the century commenced with the building of the western porch, which was followed up by the magnificent eastern arm of the cathedral. At St. Alban's, the gigantic Norman church had not been completed much more than half a century before its western façade was demolished, and recommenced in the new style, in which one-half of the nave partook; and before the thirteenth century was finished the choir had also been rebuilt. At Durham, the Norman church received the magnificent addition of the Chapel of the Nine Altars. At Fountains, a similar addition was made with an entirely new choir and many noble appendages. Wells cathedral was almost rebuilt in the new style. Indeed, it is scarcely possible to single out any great church which does not, more or less, evince the influence of the great architectural movement which ushered in the thirteenth century. Its most complete work is the cathedral at Salisbury, and among its later creations we may enumerate the eastern portion of Westminster Abbey, the whole of Tintern Abbey, and nearly the whole of the once sumptuous church of St. Mary's Abbey at York; while its last decade produced some of the most exquisite gems of art, such as the tombs of Cruchbach, of De Luda, and of Archbishop Peckham; the chapel of Ely-place, Holborn; and the Eleanor Crosses: so that, taken as a whole, the century can claim most of the noblest, as well as of the most elegant, productions of English art.

In France its pre-eminence is, if possible, yet more manifest. The century opened there under the fully-established power of Philip Augustus, the most powerful monarch who had ruled France since the days of Charlemagne. In the days of his predecessor, the English king had governed more French provinces than the King of France himself; but now the English were almost entirely expelled, and this mighty monarch reigned without a rival. In his days commenced an almost general rebuilding (wholly or in part) of the cathedrals, excepting such as were of very recent date. The west *façade* of Notre Dame at Paris, the greater part of Rouen, of Rheims, of Amiens, of Coutance, of Bourges, of Le Mans, and a list far too long to be enumerated, owe their grandeur to his reign, or immediately followed it.

Towards the middle of the century the same work progressed gloriously under the auspices of St. Louis, and though slackened from actual satiety towards the close of the century, it was not really checked till the commencement of the English war.

As in England, the works thus produced evince masculine grandeur of the highest order at the commencement, and the most delicate beauty at the close of the century; while, during its middle portion, the two are united in the works of St. Louis. In Germany, the works of this century evince great artistic disturbance. The change from the round to the pointed-arch style had been there resisted, while both in France and England it had been worked out to maturity. At the opening of the century, German architecture consisted of a highly-refined variety of Romanesque, with the partial use of the pointed arch, chiefly where suggested by constructional necessities. This, during the first quarter or more of the century, developed itself into an early pointed style, strictly German, and holding out promises of great force and originality,—promises which were frustrated by the sudden inroad of French Gothic about 1250, after which, though Germany took a course still very much her own, it was one in a great degree severed from her noble early tradition, and emanating from the French graft rather than from the original stem.

Italy received her Pointed architecture from France and Germany, and mingled it freely with her Classico-Lombardic traditions. The union produced many noble and many incongruous developments. The lessons they offer must be used with caution; but, Italy being the land of ancient art, the land of sculpture, of painting, of rich marbles, of mosaic work, and of municipal and other civic edifices, the graft of northern art upon so prolific a stock has, as may readily be imagined, produced varieties which the circumstances of northern nations would have rendered impracticable in its native lands, and the suggestions they offer, if judiciously used, are well calculated to add copiousness to the style in the hands of modern revivers. Of this I may have occasion to say more hereafter.

The thirteenth century was to Mediæval art what the Periclean and Augustan ages were to the Greek and Roman; and in each case, though war and bloodshed are in themselves hostile to art, there can be no doubt that the excitement of the human mind, resulting from great national struggles, has tended to produce that advance in art which followed in one case the glorious assertion of national independence, in another the conquest of the world, and in a third the romantic and unselfish efforts of the Crusaders.

It was a period of deep-seated mental excitement, of a prodigious upstirring of the human intellect. Our learned men at the present day may smile at the quaint and imperfect erudition of these early periods of our civilization, but they should remember that they were our days of *youth*, of *warmth*, and of rising vigour, while the more perfected literature of our own age may possibly be found to superadd to its maturity a few symptoms of old age.

This youthful energy pervaded every branch of art: every thing seemed to experience a new, a generous, and vigorous impulse. All Europe became filled with the productions of the newly generated art: every city became a repertory of noble and sublime architecture, and every town and village became possessed of productions equally beautiful, if more modest in their pretensions; while the intervening country was studded over with castles and monastic establishments, in which the same majestic art displayed itself in ever-varying forms, each suited to meet their different requirements.

Nothing is more difficult than to describe a perfected art. My last two lectures traced out the gradual construction of Pointed architecture, and its transition from the preceding style. This was comparatively easy, but to describe it when it had attained perfection is far less so.

The fact is that there is neither in France nor in England any marked difference between the styles, during the later period of its transition and when perfected beyond that unity and consistency of parts which indicate maturity. In France particularly this is the case, for neither had the style there continued long to evince its transitional state by the retention of strictly Romanesque features (unless the square abacus can be so designated), nor did it when perfected throw off, as in England, that one detail which to our eye seems a relic of transition. The later transition and the earlier perfected specimens seem, in France, to be the same art a little more developed and more homogeneous, rather than to have many describable points of difference. In England, the change of the abacus from the square to the round form, makes the distinction more marked, so that English examples at the opening of the thirteenth century, always appear later and more advanced than contemporary French ones. I instanced in my last lecture four examples of perfected Early English;—The eastern transept of Lincoln, completed about 1200; the eastern chapels at Winchester, about 1204; the western portals at St. Alban's, finished about 1205; and the western porch, or gallilee, at Ely, finished about 1214. None of them show any remains of transitional character, and all having the English round capital in full development, appear to the English eye more advanced than such works as the western portals of Notre Dame, at Paris, which are, if anything, somewhat later in date. In this country, in fact, the form of the abacus, is the distinguishing feature between the transition to the perfected style, while in France there is no such distinction to be found. The difference is more one of feeling, which the practical eye perceives at once without being able to define.

Though I speak of the Early Pointed as a newly generated art (as it in effect was), it must never be forgotten that it is a distinct and natural growth from the pre-existing Romanesque. The more I study old examples the more obvious does this appear. Take either France or England alone, and you may from either construct, *ad libitum*, unbroken catenæ of examples, showing step by step the natural and logical growth of the new style out of the old; and that without any essential imported element (for the Byzantine capital, which was the parent of the Gothic one, was an accidental though a happy importation).

This progressive growth was but the practical realization of three great aims towards which the Romanesque architects were ever striving. The perfecting of their arcuated and vaulted construction, the increase of the altitude of their proportions, and the general adding of refinement and elegance to their details: thus, if you take the internal bay of a Norman cathedral, and simply set yourself the task of increasing its height in a given proportion, the result will be a Gothic bay, for the arches cannot participate in the increased elevation without becoming pointed. If the details are further refined, it becomes an ordinary transitional design; and if the process is carried on a little further, it becomes a perfected Early Pointed work; the distinction between transition and perfected Early Pointed, being merely the carrying on of the process by which the former was generated out of Romanesque. This fact, which all who look closely into it must see, was what led a talented writer to say, that Early Pointed was only Romanesque improved. He meant this as an argument against it as compared with the still

* Delivered on Thursday, the 20th inst.

succeeding styles; but I confess, for my own part, while feeling strongly the truth of the observation, and highly appreciating the importance of some of the subsequent developments, I do not the less admire the glorious productions of the early style, from seeing in them the evidences of the vigorous stock from which they have sprung.

It will be seen by enumerating the leading characteristics of Pointed architecture, that the great majority of them were already perfected, or, at least, brought to that reasonable and consistent state of development which stops short of excess and exaggeration, at the commencement of the thirteenth century.

The Pointed arch had obtained universal predominance, though without involving the rejection of the semicircular or the plain segment, where circumstances called for them. The general predominance of the vertical line was acknowledged, without running into the excess of underrating the horizontal: lofty and aspiring proportions prevailed, though not to the extent of exaggeration, and without unreasonably asserting their claims in works of a humbler class: subdivision of arches into orders, and the clustering of the pillars, so as to satisfy the eye that each member of the arch was severally supported, had arisen during the Romanesque period, and was now carried out still more systematically, and with greater elegance; and the system of making the bases and capitals face in the direction of the insisting arch-rib, which had also arisen early, was (in France at least) very generally adhered to. The distinction between constructional and decorative pillars, one of the great characteristics of the Gothic style, both round and pointed, was carried to its fullest extent. The vaulting system was perfected, though retaining its Normal simplicity, and the corresponding system of buttress (solid or arched) and pinnacle, which are the necessary accompaniments of a perfect arcuated style, had been brought to perfection. The continuity of line was acknowledged sufficiently to suggest a feeling of natural growth of the parts one from another, from the bases of the shafts to the bosses of the vaulting, but without that sacrifice of force and of all salient points which became the vice of later styles.

The principle of rendering the useful features ornamental was fully developed: as an instance of it the doorways, the only parts of the exterior which *must* of necessity be seen from close at hand, were rendered magnificent, beyond all former precedent, and became the vehicles of noble sculpture and the great exponents of the objects of the building, whether religious or secular. The windows now became great characteristic objects, not only from their richly-painted glass within, but as leading architectural features, both within and without. The bell-towers became glorious structures, rendering the cities conspicuous throughout the whole surrounding district, and making every village a distinct and beautiful point in the landscape. The same principle obtained in all secular structures. The castles of the nobility became truly noble structures, glorious for the stern grandeur of their external aspect, and for the massive beauty of their internal architecture: the gates and defences of cities partook of the same severe grandeur, while the street fronts, the townhalls, and other civic buildings, displayed architectural characteristics, modest or grand, as suited their several purposes. In Italy, where municipal institutions were more developed, noble street palaces were erected, and everywhere the architecture, whether viewed in the mass or in its details, was suited, as by an unerring instinct, to the objects on which it was exercised.

The decorative system of the architecture had also been brought to great perfection. The mouldings were refined without losing boldness or strength,—in fact, were strong or delicate as suited their position: the foliated carving had arrived at very high perfection, and was of a kind perfectly new: the magnificent creation of the artistic mind, sculpture, was often profusely used in connection with architecture; and if not of that perfectly studied symmetry which satisfies the academic critic, it evinces a boldness of conception, a quickness of invention, and an unaffected grandeur of sentiment, which our modern sculptors would do well to emulate, while it is eminently suited, by its rigid lines and severe force, to architectural purposes.

It would be absurd to attempt, in a single lecture, to give any detailed description of the architecture of this great period; nor is it necessary, as no style is so familiar to those whose attention has been at all turned to such subjects. I will, however, take a few of its leading points, and call attention to some of their characteristics.

I will begin with the *column*. In no feature is the difference between Classic and Gothic architecture so strongly marked as in the column. In the former one general ideal alone prevailed—the round shaft with a capital, and with or without a base. In the latter this normal type is equally admissible and equally honoured; but in addition to it an almost endless list of forms is introduced. In the first place, the round column is converted at pleasure into the octagonal or other polygonal form: this is a mere variety of the normal type. Then either the round or the polygon is flanked by four smaller shafts, attached or detached; and these subsidiary shafts may be increased in number, subordinated one to another, both in size and saliance, and may be all attached, or all detached; or the attached and detached shafts may be used alternately or in any other order, in the same pillar.

Then, again, instead of the cylindrical pillar, we may have four cylinders united in one; and these may, in their turn, be made the nucleus round which detached or attached shafts may be grouped; or we may have two or more separate cylindrical main shafts carrying the load, and may group subordinate ones round them; and again we may take other forms of nucleus, as the square, the canted square, or a pier with receding orders, and place our shafts round them; and finally we may form groups in which no specific form of nucleus is to be traced, but which consist of shafts arranged with reference to the superincumbent arch alone.

The number of changes which may be rung on these varieties of pillar is absolutely endless; though it is not desirable to indulge too much in the more intricate forms of grouping, but, as a general rule, to keep to the forms which are naturally suggested by the duties the pillar is designed to perform. When detached subsidiary shafts are used it is somewhat unnatural to joint them in their length without introducing some visible means of tying them to the main pillar within. This necessity gave rise to the use of the moulded band, which forms so beautiful a feature in the pillars of this period. It is sometimes made of brass, but more usually in stone or marble.*

ENGLISH ART BY A FRENCH CRITIC.

SOCIETY OF ARTS.

AT the meeting held on Wednesday, the 19th, Sir Charles Eastlake, P.R.A. in the chair, a paper was read in the French language, entitled "Les Arts, les Artistes, et l'Industrie en Angleterre depuis la dernière Moitié du Dix-huitième Siècle jusqu'à ce Jour," by M. Théophile Silvestre. The author began by explaining that he had come to England in obedience to the order of the French Government, to study the English School of Fine Art, and he expressed especial gratitude to the Society of Arts for having for the first time allowed a paper to be read before them in a foreign language; as, had not this been permitted, he would not have been able to do anything like justice to the subject which he had undertaken to treat. He then passed in rapid review some of the more important services rendered by the society to the arts, as well as to manufactures and commerce; and expressed a hope, that as it was the originator of the Great Exhibition of 1851, which had been so brilliant a triumph; so it would be able to carry out with similar success its present proposal of holding another Great Exhibition in 1861. Passing on to the more immediate subject of his paper, M. Silvestre proceeded to speak of some of the earlier masters of the English school, criticising at considerable length the works of Hogarth, whom he regarded as the true founder of that school which now commands the admiration of Europe. The works of Reynolds, Gainsborough, Wilkie, and other masters, were then reviewed.

Parts of the paper were exceedingly felicitous and eloquent. What M. Théophile Gautier, and other French critics who have pronounced the English, *quoad* art, but "varnished barbarians," will say to M. Silvestre's rose-coloured view of our school of painting, remains to be seen. As Mr. Digby Wyatt remarked, very justly, on this point,—To all that M. Silvestre had said there was nothing to object. All that he had said of Hogarth, Gainsborough, and other English painters, they must agree with; but he had not told them that there still existed in art realms which we had not conquered. It was impossible to examine the beautiful photographs of the works of Raffaelle exhibiting on the walls of the room, and then to look at the works of Barry, without seeing that there was a sublime in art which we had not yet attained. With regard to the present day, he thought they must admit that pictures were regarded too much in the light of upholstery and furniture. If we were really to advance the art of painting, it must be placed more in the same category with sculpture and architecture. The subjects would then be treated with a more becoming dignity, and we could then hope to rival the great men of past ages.

Mr. W. Hawes, Mr. John Bell, Sir Thomas Phillips, Mr. Lavanchy, Mr. Fahey, Mr. C. W. Dilke, and the chairman, also spoke, and some of them expressed the thanks of the meeting to M. Silvestre in his own language.

The paper, read as we have said in French, was listened to for more than an hour with the greatest interest by a crowded room, and the nature of the applause showed that it was carefully followed by all present. Printed copies were in the hands of the members, but the success of the experiment was mainly due to the clear pronunciation and admirable elocution of the lecturer, the importance of which is often lost sight of by gentlemen who read papers. If, for example, two or three of the gentlemen who have at one time or another lectured at the Architectural Museum had thought it worth while to recollect that an audience desires to *hear*, their excellent matter would have been better appreciated than it was.

* To be continued.

BURNS AT THE CRYSTAL PALACE.

MESSRS. MONCKTON MILNES, Tom Taylor, and Theodore Martin, the judges invited by the directors of the Crystal Palace to award the prize of 50 guineas to one of the 621 poems sent in, having made their selection, the envelop accompanying it was opened at the festival, on Tuesday, and contained the name of Isa Craig, of Ranelagh-street, Pimlico. Miss Craig is a young Scotchwoman, who has been connected from the foundation with the Social Science Association. Those who attended the late meeting of that body, at Liverpool, will not fail to remember her as the most efficient of the officials. The poem was read to 15,000 persons by Mr. Phelps, of Sadler's Wells, somewhat monotonously, but so as to be appreciated by the majority of those present. The greatest enthusiasm as to the authorship prevailed,—much greater than could have been anticipated,—and the day passed off altogether satisfactorily. The poem, as the work of a lady, must be considered a very remarkable production, although with all our admiration of Burns we can scarcely subscribe to the opening verse, which says,—

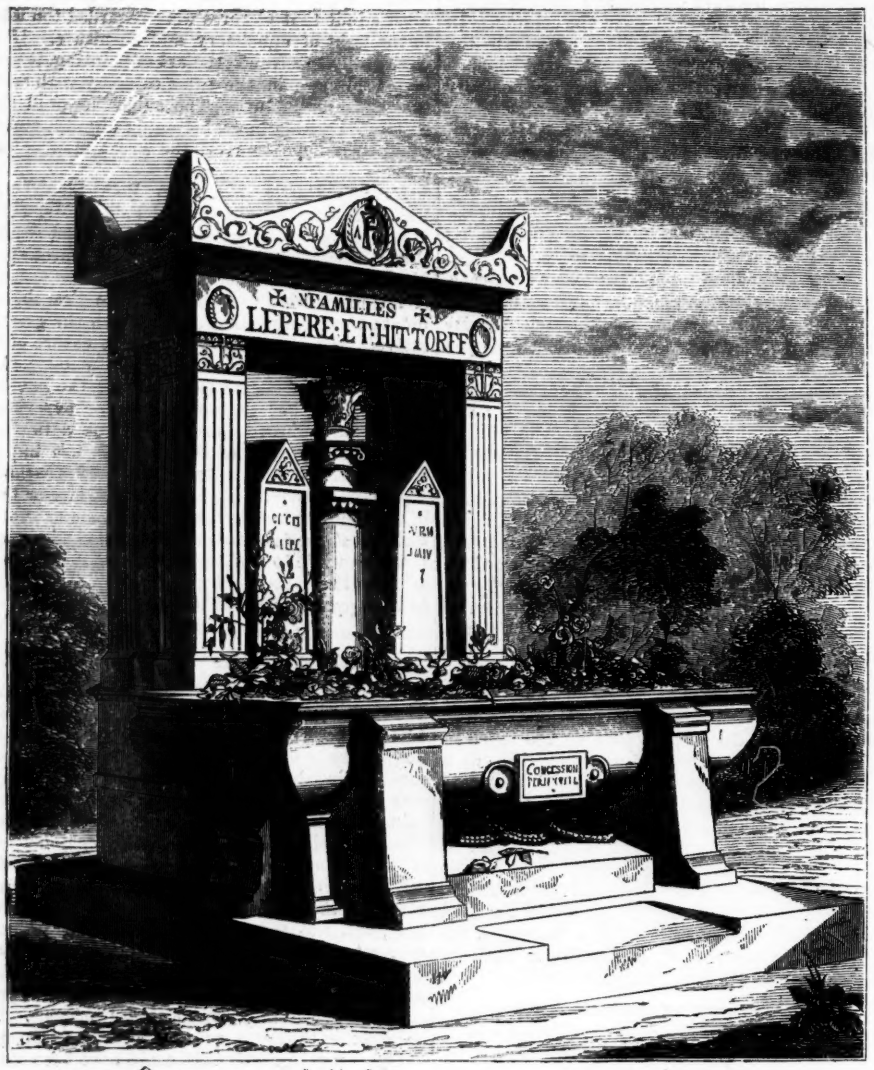
> "We hail, this morn,
> *A century's noblest birth;*
> A Poet peasant-born,
> Who more of Fame's immortal dower
> Unto his country brings
> *Than all her kings!*"

The beauty of the closing lines few will deny,—

> "The arch blue eyes,—
> Arch but for love's disguise,—
> Of Scotland's daughters, soften at his strain;
> Her hardy sons, sent forth across the main
> To drive the ploughshare through earth's virgin soils,
> Lighten with it their toils;
> And sister-lands have learn'd to love the tongue
> In which such songs are sung.
>
> For doth not Song,
> To the whole world belong!
> Is it not given wherever tears can fall,
> Wherever hearts can melt, or blushes glow,
> Or mirth and sadness mingle as they flow,
> A heritage to all?"

A number of memorials of the poet, exposed in cases, were looked at by throngs with great interest, and the recital of "Tam O'Shanter," illustrated by dissolving views after Faed, was very well done, and gave evident pleasure to succeeding audiences. A concert, comprising songs selected from the works of Burns, formed part of the proceedings.

SUB-WAYS.—The Metropolitan Board of Works have had under discussion a report from the committee of works, stating that they had considered the memorial of Mr. Henry Carr, relative to a plan for the construction of an omnibus sub-way from St. Margaret's Church, Westminster, to the Royal Exchange, to be carried out under Parliamentary powers, by means of a subscribed capital, and recommending that the projectors be informed that the Board did not feel justified in expressing any opinion upon the scheme in question at this stage of the proceedings; and further apprising them that, in case the measure should be brought before Parliament, it would become the duty of the Board to take proper steps for guarding the sewers, and other subjects of their jurisdiction, against injurious interference.



TOMB OF THE LEPÈRE AND HITTORFF FAMILIES, IN THE NORTHERN CEMETERY, PARIS.——*M. Hittorff, Architect.*

TOMB OF THE LEPÈRE AND HITTORFF FAMILIES, PARIS.

PLACED on one of the most elevated spots in the Cemetery "Du Nord," at Paris, this tomb is distinguished by simplicity in its composition, and that feeling of repose which befits a burial-place. Such ornaments as there are, of a symbolic character, are employed only in the upper part: these consist of sculptures of small projection and incised forms. Beneath the pediment, on the base of a column, the architect has placed a model of the capital of the column of the "Grande Armée," of that of the church of St. Vincent de Paul, and of the Champs Elysées. At the sides rise two pyramids, serving to receive inscriptions. The tomb is erected on a site 6 feet square, and is wholly of a fine stone called "Chateau Landon." The height is 9 feet. We give with the plan a section drawn on the same scale (1 inch to 6 feet), which shows the entrance for the coffin into the vault beneath. The detail of the capital is on the scale of 1 inch to 2 feet.

THE SPACE ON THE SOUTH SIDE OF ST. PAUL'S CATHEDRAL.—Is it possible that after all that has been said on the desirability of keeping open the area on the south side of St. Paul's, the deputations, the discussions, and the promises, that it is about to be covered with buildings? It can scarcely be credited, and yet appearances seem to lead to the belief. If persisted in, this blocking up of the cathedral will be a matter for long continued regret.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

VILLARD'S SKETCH-BOOK.

THE third *conversazione* meeting of this society was held on the 19th of January, at the Museum, Parade, Taunton. The meeting was hardly so numerously attended as usual. The President, in announcing the programme of papers for the evening, said the first paper was by Mr. Giles, entitled "Notes of an Architect's Sketch-Book of the Thirteenth Century;" to be followed by Mr. Jones, "On the Classification of Shells, and Incidents in the Life of a Mollusc;" after that by a lecture by Mr. Sanford, "On Painted Glass." Mr. Giles, in his paper, said the sketches of Villard showed a thorough knowledge of the conventionality of art. In all the illustrations there was evidence that they were directly studied from nature. At the present time, continued the reader, there is a great conflict going on between the advocates of what is called the naturalists' school on the one hand, and the conventional school on the other;—*these* insisting on merely imitating natural forms, or composing with natural forms an imitation of natural c ompositions;—*those* insisting that both the individual feature and the whole composition should be subject to stern governing laws, to be sought only, perhaps, in the leading or typical form of nature. Probably the true partly lies between these extremes; and this seems to have been the road travelled by artists of the time in which Villard studied; and yet, with such manifest power, how are we to account for the shortcomings of some of the drawings for feeble or even distorted expression in the faces, with exaggeration in limbs, and in the architectural drawings utter absence of pictorial effect and failure in perspective? It seems to me that pictorial art was at this time chiefly confined to illumination, and that architectural drawing was used merely to set out or describe work to the workmen in the shortest way, without any attempt at pictorial effect; and we have pretty good evidence that the great buildings of the middle ages were designed and built by the aid of only a few meagre sketches on parchment, the utmost care, however, being taken in drawing the lines of work on the stone itself, as may be seen by examining old work which has fallen apart, on which the lines may still often be found. The original sketches were, therefore, merely diagrams on which little time was wasted, all the skill of the artist being reserved for the actual work in the building itself; and if we take note of the failing of these sketches as well as their merit, let us remember that they were drawn by the men who built the cathedrals, which are yet our wonder and admiration. The last point which I would notice is the variety of subject in these drawings. All the useful sciences are illustrated here; and, if we smile at the extravagance of the scheme for perpetual motion, we may admire the simplicity and ingenuity of some of the contrivances, showing as they do, that the screw, pulley, and inclined plane, and other mechanical appliances (based on them), were nearly as well known to Villard as to Brunel. And if the illustrations of science are various, those of nature are not less so—foliage, draperies, and animal life; the latter from the lion to the grasshopper.

GIANT TIMBER.

OUR attention has been called to an importation of three cargoes of mast-pieces of timber, now discharging in the Commercial Docks, Rotherhithe. The sizes, both in length and square, are so unexampled as to be worthy of record. One vessel, indeed, the *Bostonian*, of 1,000 tons, has spars of a magnitude that we believe were never before made timber of commerce: they run from 90 to 140 feet in length, and from 26 to 40 inches square. One mast contains twenty-eight loads, weighing about thirty-three tons, and is (as are most of them) nearly as straight as a ruler, and without a knot; being 139½ feet long and 39½ inches square. When felled, it measured 316 feet to the branching top, and for 150 feet was without any branch at all. It was squared to 41 inches; but was of necessity reduced to 39½ inches to admit of its entering the ship's bow-port.

The quantity of timber in this enormous tree is worthy of notice: call it 300 feet by 41 inches square, it would contain 3,502 cubic feet, or 70 loads 2 feet as squared, or 116 loads as round timber. It would saw into 2,050 boards 41 inches wide, ¼ inch thick, and 12 feet long; or, allowing about twelve per cent. for waste in sawing, 1,800 boards 36 inches wide by ¼ inch thick, and 12 feet long.

If laid out quite close it would cover 72,000 square yards, or 1 acre, 1 rood, 2 chains, 6 poles, 10 yards; or, allowing for unavoidable interstices, about two acres and a quarter.

It is difficult to imagine a tree half as high again as the monument before it branches out.

These masts are considered worth from 12*l.* to 14*l.* per load, and we understand are secured for the British navy; and it is said that the longest may perhaps be raised as a flag-staff at Windsor.

The quality of the timber is not precisely white pine, red pine, pitch pine, hackmatac, or cedar, having, in some respects, the qualities of each; and inclining perhaps to red pine. It swims lighter than pitch pine, has beautiful figure, and in taste has a small degree of acidity. It however appears not to have the peculiar character of the "Wellingtonia Gigantea" as the specimen of the wood is exhibited at the Crystal Palace. The discharging of these enormous sticks from the vessel has been attended with great difficulty and expense, and was not altogether without danger.

In the *Times* of the 21st is the description of "a wonderful valley" in California, by C. D. F. called the "Yosemite," or Bear Valley. The writer says: "I wish to mention that near the road to this valley I visited a grove of the far-famed Wellingtonias, or mammoth cypresses, of which there are about 500 interspersed among numerous others less remarkable, though still very large. The largest I measured was 39 feet in diameter 6 feet from the ground, and was at

the least more than 400 feet high. Another, which had fallen, and of which the bark alone remained, formed a tunnel through which three horsemen could ride abreast."

We are indebted for these particulars to Mr. N. Gould, F.S.A. by whom we are also enabled to append an interesting account of the voyage of the *Bostonian*, given him by the mate of the vessel, a very intelligent man. It will be seen that this is among the first imports from New Columbia; but we do not yet know what may hereafter be added to our commerce by the colonization of Vancouver's Island.

The *Bostonian*, of Boston, 1,099 tons American and about 1,000 tons British measurement, left New York on the 21st of October, 1857, for San Francisco, with cargo and passengers, and was there chartered to load masts, &c. for London at Teekelet, Puget's Sound, in Washington territory, United States, at a freight of 5*l*. 3s. 9d. per ton, or load.

The ship remained at Teekelet 103 days, was actually at work receiving cargo about 50 days (as will be seen by the account of her day's work, which I copied from her cargo-book and attached). On completing her lading, she sailed again to San Francisco to make up her complement of hands, several of the crew having deserted the ship at Teekelet for the gold-diggings in British Columbia. The vessel entered the Commercial Docks on the 27th of December last; the voyage, therefore, occupied 433 days.

According to statement, there are only twenty-one white settlers in Teekelet. The trees, when felled, are drawn to the bank of Puget's Sound by oxen, and are then rolled into the water. In regulating the length of the timber for masting purposes, the scale is about 3 feet length for 1 inch square. The tree numbered 37 is the largest that has been shipped at Puget's Sound. At a standard of average cost, the trees 80 feet in length by 32 inches square cost in the country 16*l*. each, or about 39s. per load.

PROPOSED MEMORIAL TOWER IN HONOUR OF WATT.

THE accompanying engraving represents the monumental tower which it has been proposed to raise in memory of Watt, in the cemetery occupying the heights to the west of the town of Greenock, the birth-place of the great mechanician. Some of the Italian Campanili have been used as types.

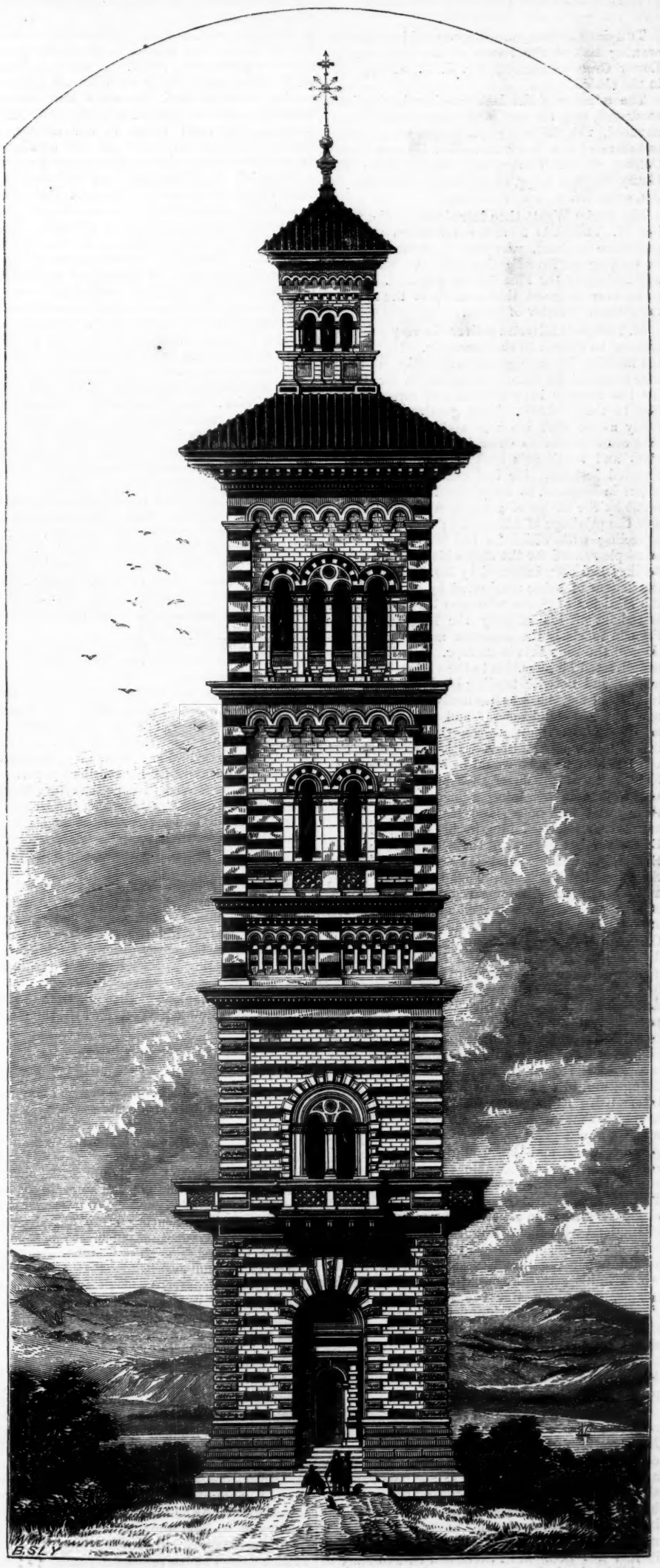
The proposed tower is upwards of 40 feet square at the base, rising at the level of the main cornice to a height of 163 feet, and is surmounted by a turret or observatory of the further height of 62 feet, making the total height 225 feet above the base line. The noble eminence on which the testimonial is to be placed is likewise at an elevation of 289 feet above high-water mark, making the height of the tower altogether 514 feet above the level of the sea, so that it will be seen for miles around in every direction.* The upper turret is adapted for the reception of an electric time-ball, and for nautical and astronomical observations. Thus it is sought to make the structure useful to all engaged in the navigation of the noble estuary of the Clyde. The views from the balconies and several floor levels will be fine, and internally the structure will comprise rooms of about 30 feet square, connected by means of a circular staircase and open gallery, and having on their sides a series of niches and recesses suitable for the reception of statues, busts, or other memorials commemorative of men eminent in science or philosophy.

In the erection of this testimonial, it is intended to incorporate gifts of materials from every quarter of the globe, inasmuch as there is no portion of the civilised world which is not indebted to the genius of Watt.

The present position of the monument, as we understand, is this. A commanding and valuable site has been obtained: the ground has been levelled and cleared for the foundations: contributions of materials of the most interesting and varied character have been received from Bombay, Malta, and many places on the shores of the Mediterranean; from various parts of England, Scotland, and Ireland; from Sebastopol, Maryland, Italy, Isle of Man, and many other parts too numerous now to mention. These contributions are on the ground, and a mass of other material is promised; lime and stone sufficient to build the first 14 feet. An object of this vast character is of necessity slow in progress, but it is hoped that twelve or fourteen years may possibly complete it.

The ground is being prepared for the reception of the foundations, under the direction of Mr. David M'Intosh, architect, who erected the hospital founded in the immediate neighbourhood by Sir Gabriel Wood.

* The engraving scarcely gives the right idea of the great elevation at which the memorial is to be placed. The river Clyde seen in the distance is far below it.



PROPOSED MEMORIAL TOWER, IN HONOUR OF WATT, AT GREENOCK.
Designed by Mr. David McIntosh.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixth ordinary meeting was held on Monday evening last, at the rooms of the Institute, 16, Lower Grosvenor-street, Mr. J. J. Scoles, V.P. in the chair.

The minutes of the last meeting having been confirmed, and the receipt of some donations announced, the following gentlemen were elected members of the Institute:—Mr. Hyman Henry Collins, of 61, Torrington-square, fellow; Mr. Henry Simpson Legg, of 6, South-square, Gray's-inn, associate.

Mr. Digby Wyatt then introduced to the meeting M. Théophile Silvestre (of whom we have elsewhere spoken), who was at present engaged in making an investigation into the knowledge and history of the Fine Arts in England. He had come over to greet this country in the name of the French Minister of State.

M. Théophile Silvestre delivered a very animated address in French to the assembly. He thanked the meeting for their generous reception, and likewise returned his acknowledgments to Mr. Wyatt for the manner in which he had recommended him to their esteem. That gentleman was perfectly aware that his sole ambition in visiting this country was to enter into a communion of ideas and sentiments with men of honour and elevated instinct. He had come to study works of art in England, to enlighten his mind, and to profit by the advice of gentlemen such as he had now the privilege of addressing; and the warmth of feeling with which he had been received was an ample reward for the step which he had taken. As they had been informed by Mr. Wyatt, he had the honour of being nominated by his Excellency the Minister of State, who also belonged to the household of his Majesty the Emperor of the French, to study the museums and other institutions of the Fine Arts in Europe. His Excellency had directed his attention to the various European schools, and notwithstanding his decided taste for traditional art, he was perfectly sensible of the new artistic tendencies; and English artists might confidently depend on the sympathies of this enlightened minister. His Excellency had assured him that he would be at all times ready to give them proofs of that sympathy, and to assist them in obtaining a just appreciation of their merit in France; and his Excellency had, moreover, authorised him, in his name, to invite English artists to forward their works to the next Exhibition, which would take place in Paris in the course of next April. That Exhibition would, undoubtedly, furnish some remarkable specimens of British art. His Excellency, the Minister of State, was anxious that these should receive the greatest possible attention, and he would do his utmost to induce the Emperor to make choice of some of them. In the paper which he had read at the late meeting of the Society of Arts, presided over by Sir Charles Eastlake, the president of the Royal Academy, if he had failed to exhibit a profound knowledge of the subject, he had at least given candid utterance to his sentiments with regard to English artists dead and living; and in writing their history he felt deeply interested. The applause of the Society of Arts, to which that Association had now added theirs, was to him a great encouragement to study and perseverance; and he would be but too well recompensed for his humble efforts if he were to see at Paris in the present year the English and French schools fraternally united. He should always feel happy in assisting to connect the glory of England with that of France; and his profound love and ardent devotedness to his own country would not make him lose sight of the honour which in his record he ought to attach to British genius. England was the friend and ally of France, both by the triumphs of conquest and of art. M. Silvestre concluded by a reference to the works, of so much importance in an artistic point of view, which had been accomplished by his Majesty Napoleon III. without weakening the private or public resources of France.

Professor Donaldson said it was the duty of the members of the Institute to second the efforts of M. Silvestre, for it was a compliment paid to the country whenever a foreigner, but more especially a native of France, came over to England to study the fine arts. In this respect England was 200 years behind France. (Cries of No, no!) He was speaking of the Renaissance; and probably they would never have had the fine works of Michelangelo, if it had not been that France had sent to Italy to establish schools for the promotion of art. France was successful in the establishment of these schools, but our Government had not done so. Therefore he maintained that France was 200 years in advance of this country. We had never been able to keep pace with France in this respect; and the French excelled the English in the colonies, and in all other parts of the world. It was consequently all the more agreeable to see a French gentleman coming over to mark the steps that we were making; and if we desired to achieve any further progress, we must listen to our defects, and turn a deaf ear to praise of our excellencies. In return for the visit of kindness and approval with which this foreigner had favoured them, they ought to do every thing in their power to assist the object which he had in view, by giving him all the information in their power and by aiding him in his present mission. Allusion had been made to the wonderful results accomplished by the present emperor in the way of architectural ornament in Paris, but every thing in the way of description must fall far short of the reality, which could only be appreciated by a personal visit. London had not done anything like what she ought to have done, but there was a gradual improvement visible, which was very gratifying, and would doubtless be attended with the best results. In conclusion, he again exhorted the members of the Institute to show their gratitude for the interest taken in them by foreigners, by proving that they themselves were desirous to aid by every means in their power the promotion of the fine arts in all the countries of the world.

Mr. G. L. Taylor then read a paper on "Ancient Roman and Etruscan Architecture and Remains, illustrated by Drawings on a large Scale, the Result of recent Studies on the Spot." The reading of the paper had not concluded until after ten o'clock. In the course of it Mr. Taylor referred feelingly to his colleague the late Mr. Cresy, and pointed to the notice of him which appeared in the *Builder*.

Professor Donaldson proposed a vote of thanks to Mr. Taylor for the tour which he had taken them through Rome.

The Chairman had very great pleasure in seeing his old friend Mr. Taylor once more amongst them, and especially hearing him mention the name of another old friend and former schoolfellow, Mr. Cresy. They were all very much indebted to Mr. Taylor for his excellent paper.

Mr. Wyatt referred in complimentary terms to the beautiful drawings by which the lecture had been illustrated, and inquired whether Mr. Taylor would be willing to have them photographed, in which case he should be anxious to obtain copies of them.

Mr. Taylor said he had a great admiration for photography; and although he entertained no very strong personal feeling on the matter, he should be glad to aid the Institute if the object proposed could be accomplished. He himself had assisted in getting M'Pherson's photographs from Rome.

The vote of thanks was then put from the chair, and passed unanimously, after which the meeting separated.

ENGLAND *versus* FRANCE IN ART.

SIR,—I cannot help asking you to allow me to protest publicly against a custom which has grown up in the Institute, springing, no doubt, from the best intentions, but apt at times to run a little into what may be called excess of good taste, to the discouragement of simple minds. Politeness, like all else, has its limits; and accordingly, when our Secretary of Foreign Correspondence makes it a rule, in complimenting stray "distinguished foreigners," who appear at our meetings from time to time, to inveigh against English art, English Government, and everything that is English, as being utterly depraved, and to magnify and laud as the *acmé* of perfection everything that is not English, his politeness, even if it be confessedly mere politeness and no more, is calculated to make the patriotic wince.

On Monday evening there made his appearance at the Institute a Parisian artist of some sort, said to possess the incomprehensible character of a commissioner sent by the French Government to inquire into "the English School of Art," and write a book upon it. This gentleman comported himself in every way creditably and modestly; and if his somewhat youthful appearance, his ignorance of our language, and other external signs, seemed at variance with the usual idea of an envoy to this country on an important intellectual mission, yet we might satisfy ourselves with the reflection that French envoys at the present day must not always be too critically looked at. However, it fell of course to the Foreign Secretary of the Institute to "speak pretty" to the stranger; and the way in which this duty was performed,—the pre-eminently graceful and overflowing way in which it was done,—is what, in the interest of barbaric truth and fair play, I venture to object to.

"Two centuries and a half," most emphatically reiterated, was the exact period set down, by which "France is in advance of England" in art. The proper parallel between the two countries was to contrast the formation of the Boulevard de Sebastopol with the building of an edifice "dedicated to Mammon" on the piece of ground beside St. Paul's, and the erection of shops on the vacant site behind the statue of Sir Robert Peel. As for our contemptible "kings," all of them put together had not done so much for art as Napoleon *Troisième* alone had effected in Paris. And when, in such a state of things, we found an artist actually coming "from Paris itself" to visit this *Ultima Thule* of civilization, "taking the trouble to study our art," and even condescendingly to express a favourable impression of it, "we ought to consider ourselves very highly honoured!" "*Vive la France! A bas Jean Bulle!*"

When all this is translated to Mr. Commissioner Silvestre, it is to be hoped that it will not be so solemnly recorded as compliments to France too often are, but due allowance made for Britannic courtesy; otherwise his Excellency Monsieur le Ministre d'Etat, his august patron, may be misled by his report, as regards at least the true opinion of "the English school," respecting its own merits. Painters and sculptors may be left to speak to this commissioner for themselves; but if he desires to know the truth with regard to architects, it is this,—that although a few individuals are still to be found whose traditionary views lead them to sap the merit of the brotherhood at home by dogmatically preferring whatever is foreign, yet the great mass of our profession are well and proudly aware who won the day at Hamburg and Lille, and what place France, Germany, and Italy held beside old England at the Paris Exposition and in Westminster Hall. One or two of us may think it very complimentary in its way to tell a M. Silvestre that he is an angel of light from the one sole bright particular star of Europe, who, in a spirit of generosity for which we cannot be too grateful, affects to discern faint gleams of the beautiful in our poor Erebus; but a hundred to one will consider it more complimentary to him if we own our full appreciation of the well-known fact that, although French *esprit* and elasticity make the best *art-workmen* in the world, yet the sterling, solid, manly, and free thoughtfulness of England produces at this day the best *artists* as a whole that have ever been known, and under the patronage, not of kings, but of the people; and therefore, that his Excellency the Minister of State, whoever he may be, who has come to the conclusion, at length, that it is time for French self-complacency to compare itself seriously and critically with the strong, masculine intellect of the Englishman, deserves credit for sagacity.

Meanwhile, I would venture to advise the council either to determine beforehand the limits to which official politeness to foreign visitors shall go, or to declare efforts of that kind to be admissible as contributions to the "comic portfolio," in the formation of which that grave cabinet appears to take so deep an interest just now.

ROBERT KERR.

ON THE PAINTING OF THE ANCIENTS.*

THE opinions of learned authorities upon the colouring of the Parthenon, the Temple of Theseus, and other works of the best times, are so opposite, and there has been so much learned argument in support of each view, that it is impossible to lay down with certainty whether they were or were not highly coloured, as many of the Sicilian temples undoubtedly were. But the opinions of some excellent authorities and certain obvious arguments, which, in these learned disquisitions are, perhaps, not sufficiently weighed, seem to point to a very sparing use of colour in exteriors.

For the many elaborate arguments of learned antiquaries, I refer you to M. Hittorff's book which very candidly gives both views of the question, as we have not space here to go into them. There are one or two simple arguments, however, which go a long way to prove the sparing use of colour.

First, that one so constantly advanced, that the material being white marble, very difficult to work, and obtained at a great expense, it is highly improbable that its beauty should be obscured by the general coat of paint sought to be proved by M. Semper and others. Mr. Penrose, a recent and most conscientious investigator, finds no other traces of colour than those given in his book, and he uses the apparently conclusive argument, that if it were intended to colour the Parthenon all over, the marble of Hymettus would have been used instead of that of Pentelicus, the former being much easier of access, the quarries sounder, no difficulty in obtaining large blocks; but the objection being apparently that the marble is of a grey colour. Another instance of the pains taken to procure a fine white marble is the Temple of Delphi, which,

* See p. 57, *ante*.

being built of stone, was faced with Parian marble,* brought from a great distance.

It is very possible, and indeed probable, that the blazing white of the fresh marble was toned by means of a light warm dye. Plutarch mentions a temple of Diana Orientalis, in the island of Eubœa, round which "columns or styles of marble were erected, which had the smell of saffron, and assumed its colour on being rubbed with the hand."

Pliny says, "at Elis there is a temple of Minerva, in which Panœnus, brother of Phidias, covered the coating of the walls with milk and saffron, of which one perceives the smell even now when one rubs it with the wetted thumb."

Mr. Penrose, in his book, states that there are remains in some portions of the Parthenon of Mediæval painting, and is it not perfectly possible that the embellishments of churchwardens, in this and other monuments subsequent to the age of Pericles, may have misled those who take the extreme view of ancient polychromy?

Those ornaments of which there is no reason to doubt the authenticity are generally very small and delicate, and are sparingly used. The soffits, in particular, seem to have been coloured, and especially the coffers inside the portico. It is highly interesting to observe, and this is a point of vital importance in practice, that while the architectural parts and features are marked and distinct, the ornaments painted upon them are so small and delicate that the eye has some difficulty at first in deciphering them. It is a common error to suppose that boldness and character consist in making all the parts—those which are subordinate as well as the leading features—distinct and clear, so that the whole comes down upon the eye.

But these considerations are not necessarily anti-polychromatic, for in these liberal times no one will venture to deny the advantage of colour under certain circumstances, and let us endeavour to discover what may be these circumstances.

Many of us have seen the happy results of Mr. Gibson's efforts in the application of colour to sculpture. He founds upon his persuasion of the practice of the Greeks his system of a pale warm tint (not paint) upon the flesh, a faint indication of red upon the lips, and blue in the eyes: the hair is lightly gilt, and the drapery edged or dotted over with delicate stars in colour. But we as architects, in admiring Mr. Gibson's works, must not forget the marked difference between sculpture applied to architecture, and sculpture *per se*, or furniture, if we may venture so to call statues which have no distinct destination, but stand upon a pedestal or fill a niche as an ornament to a temple or gallery. In the former the conventional nature of architecture forbids us to raise the idea of living beings entering into its combinations. How disagreeable and absurd would be the impression of living beings perched on a pediment or built into a frieze!

With statues which do not form a part of the architecture, and, being close to the eye, are, as it were, of ourselves, the case is different. Such statues would be infinitely more interesting, if, instead of cold and uniform marble, they present a glorified image of the creature, not so near an imitation as to be a reality, though cold and lifeless, but so much of a suggestion as, speaking to the imagination rather than the senses, shall present an ethereal being; such an image as one might wish to see in a dream of a beloved person.

The next step trenches upon the domain of Madame Tussaud.

With regard to architecture, all the learned research to which I have referred you, though of the highest antiquarian interest, is not the most important subject for our consideration. Let us see whether it teaches us any lesson, and if so in what respect they affect our requirements and conditions of climate, &c.

If we accept the lesson which Nature teaches us (as we find the Greeks did), in her geographical distribution of colour, we shall find that the exterior decoration of the ancients affects us very little.

As has been before remarked, the brilliant colours which produce so good an effect in a southern climate would be staring and crude under our grey and covered skies. Any colour, therefore, which we apply to our buildings externally must necessarily be of a very subdued kind, a combination of half tones, and how can we hope to produce such harmonies as nature will establish for us by a few years of exposure.

There is another very important consideration in comparing the works of the Greeks with our own, namely, the difference of scale. The Greek temples were the merest toys compared with our great modern buildings. This does not prevent our using colour in some small objects, and in parts close to the eye, as in shop-fronts, &c. But the taste for exterior polychromy has been in a great measure rejected in the best times of northern art; indeed, so far that a large use of varied coloured materials is comparatively exceptional.

The combinations of brick and stone, and the occasional introduction in stone buildings of coloured marbles in small quantities, have been canonized by the approbation of centuries, and the good effect cannot be denied.

The beautiful manufacture of Minton's tiles offers us a facility for enrichment which we should not neglect; but where they are used in exterior decoration, it should be in small quantities, so as to be considered as detail, and not as a mass of colour affecting the general aspect and tone of the building. They may, indeed, be of such colour as to give value to the greys established by nature, while they are themselves sparkling and interesting in detail. Other combinations may be effected by the use of different stones of slightly varied tones; but of this the ingenuity of architects of the present day has furnished too many examples to render it necessary to dwell upon it here.

The inefficiency of paint in our northern climate is sufficiently shown in some of the buildings in the Champs Elysée, Paris, as the Cirque Impérial, and several café-restaurants, which, with all the pomp of classical orders, &c. are reduced by their trumpery painting to the appearance of buildings in a fair. Our climate is not bright enough to give value and brilliancy to paint. If we use colour, therefore, it must be of such material as having an intrinsic value shall supply to the mind that interest which the eye does not feel.

There is a beautiful method of exterior decoration employed in Italy, and more particularly in Florence, to which, perhaps, too little attention has been given, namely, Sgraffitto. The mode of execution is this:—Upon a coating of black plaster, a very thin setting of white is passed, and this is scratched through to the black with a point in patterns, figures, arabesques, &c. There are no doubt difficulties in carrying into execution such a system of decoration in this country. First, the nature of the climate, which is so trying to plaster; then the difficulty that we feel so much (and in which the French have such an advantage over us) of finding artists who, having the power of free and bold drawing, have not the pretension to "high art" and corresponding pay. But no doubt the first difficulty may be overcome by the various excellent cements which we possess, and this noble institution, upon which Government spends so much, ought to and will provide for the latter difficulty.

Finally, if the foregoing observations should seem to be directed exclusively to buildings in the country, and which are to harmonize and enter into combination with the objects of nature, it will be found, by carrying out the principle which I have endeavoured to establish, that if strong colour cannot be brought to harmonize with our landscape, sky, &c.—"*a plus forte raison*" it will appear crude and inharmonious amid the greys of London.

Having thus far considered the external colouring of the ancients and its bearing upon our own requirements, let us survey briefly the interior decoration, which is of so much more constant application. The foregoing observations, based as they are upon the analogy with nature, and the combination of architecture with the surrounding scenery, scarcely apply to the conditions of interiors. In an interior, with the horizon bounded by four walls, without the sky as a background to objects (the windows being, as it were, only pictures), without that most important element of the picturesque, sun-light, we have to create a paradise for ourselves, and to supply by conventional beauties the absence of those of nature. In an interior all climates are more nearly the same, and in this country, where we take pains to shut out the outer world, we may imagine any climate we please. If it be objected that the northern eye being unaccustomed to brilliant colour in nature does not require it in interiors, it may be answered that colour is warmth, and as such is grateful to the northern senses. Besides, our analogy with nature again holds good; for, being ourselves coloured in our own persons, and all our objects of use, furniture, &c. being for obvious reasons coloured, surely the receptacles for ourselves and property ought also to be coloured.

Colour in interiors has been a thing accepted in all times and countries, and I am not aware of any school having rejected or put a limit to it. All Oriental nations have used colour and do use it in their interiors. The Middle Ages, the Revival, and our own times, all agree in this practice. It is therefore unnecessary to bring forward any arguments in its support, but only to point to a few examples of the period more immediately under consideration, with a view not to the advocacy of a new system, but to see whether the practice of the ancients can introduce any improvement into our own system. By the bye, there are abundant examples in Etruscan tombs, but as the practice of the best times was of course a great improvement upon this style of art, and as Pompeii and Herculaneum no doubt nearly imitated from those best times, it is hardly worth while to dwell upon these earlier examples.

Of the Greek interior decoration we have no example extant; but we have in history allusions to many examples, and there can be little doubt that the interiors of their temples and monuments were abundantly coloured. We have record of the works of Panœnus, brother of Phidias, in the Pœcile,* at Athens, where he painted the subject of the battle of Marathon. He also painted the Temple of Minerva at Elis. We know of the paintings of Micon and Polygnotus, in the Temple of Theseus, the Propylæa, the Pinacothéca, the Temple of Rhamnus, the green and red tribunals mentioned by Pausanias, and many other instances might be quoted. It is probable that the subjects formed an important part of the decoration, and occupied a large space. Of the decorative parts we know nothing: it is therefore scarcely worth while to dwell upon antiquarian speculations founded upon the dark passages from ancient authors, which are susceptible of such various interpretations.

The decorations of Herculaneum and Pompeii, of which we have such abundant examples, no doubt follow closely the Greek practice, and they are so full of beautiful *motivos*, that we cannot do better than consider a few examples, and try to mark the principles which they contain.

There is much said about polychromy in the present day, but what is new in the application of it seems to be directed chiefly to exteriors, while our interiors are still left to the traditions of the paperhanger.

Some few there are who have laboured in this important field of interior colour, and we owe much to Mr. Owen Jones for the steps that he has caused us to take in the right direction. Without his assistance the Crystal Palace would have been but an overgrown greenhouse. Since that we have had other and more complete examples of colour by the same hand, such as St. James's Hall, &c.

One of the most important considerations in interior decoration is perspective, something to give extension to our generally too small areas.

Those who know Pompeii will bear witness to the extension given to the merest sentry-box by the judicious application of colour and ornament.

Perspective does not necessarily imply objects represented in perspective upon the walls or ceiling, what the French call a "*trompe l'œuil*." A sense of extension may be produced by receding colours, thrown back by the juxtaposition of darker or more advancing colours, by the judicious disposition of pictures, looking-glasses, &c.

Actual perspective representations, such as those in the church of Jesu in Rome, and many others familar to travellers, are no doubt meretricious, and are so directly in opposition to reason, that they can hardly be defended.

In Pompeii and Herculaneum perspectives are frequently used, but they are so fantastic that they can hardly be accused of an intention to deceive; and, though somewhat overstepping the limits of reason, those who have seen them *in situ* will generally acknowledge their charm.

Stern virtue no doubt says, let a wall be a wall, and do not attempt by any means to give false escapes for the eye at the apparent expense of continuity of construction, &c. But the realities of life are sad and dull, and if we can by art feed ourselves with pleasant illusions without deceit, are we the worse for it?

Surely the man who, living in an attic, persuades himself that it is a palace, is happier than if he obstinately recognized the neighbourhood of the chimney-pots, and refused to forget the whitewash of his walls. All art is an illusion more or less, and the more the better, so long as it stops short of delusion.

But is there no middle course such as may satisfy both reason and folly—the stoic and the epicurean? May we not, as before hinted, obtain extension by the use of receding colours, &c.? No doubt in a small room it is impossible to dissimulate the proximity of the wall, but by leading the eye to pictures which convey in themselves ideas of expanse a certain freedom is given to the imagination. The heavy picture-frames which are so universal are great destroyers of this illusion. In Herculaneum and Pompeii, the pictures were generally painted upon the wall, but we know that in the Roman times, and more particularly in the Greek, a large use was made of paintings upon panel; but we must suppose that they were either let into the wall, or were made to appear as much as possible a part of it. No doubt there are considerable difficulties in carrying out this practice in our own times, but where practicable there can be little doubt of the advantage of it.

We may also help extension by the use of receding colours. But no colour near the eye will of itself recede, or give extension, without the help of a foil (in French, "repoussoir"). This is admirably understood in Pompeii. In rooms where light colours are used, certain ornamental styles, dividing the panels, are painted either in darker colours; or, being made out with much detail, engage the eye, and the expanse of flat tint is made secondary, so as to recede from the eye. In a large space, at a distance from the eye, as a church or great public hall, certain colours have in themselves receding qualities.

The late professor of architecture, and architect of St. Paul's, relates that some years ago, when the choir was repainted, it was thought advisable to substitute for the blue pilasters, in imitation of lapis lazuli, a more reasonable colour, namely, yellow Siena marble, the effect of which was to bring it upon the eye, and materially to shorten the church, and the blue was restored accordingly.

Another leading requisite in interior decoration is variety and multiplicity of parts, by which to obtain scale. The Pompeian decoration is full of fantastic architectural features. There is a room in a house (called of Sallust), in Pompeii, which being at the most 12 feet square, has a tiny order, not 2 feet high, reigning round the upper part of the room, the panels below being dark, and the spaces between these little columns divided into rustics of various colours. In another case there is a small lararium in an entrance, of the same kind of tiny architecture. In the painting such things are constantly repeated.

In a small room where one can recede but little, each wall occupies an angle of 90, 100, or 120 degrees of the visual rays, and should, therefore, be so subdivided, that the 50 or 60 degrees which the eye can embrace should be full of matter of interest, and more or less complete in itself. The small objects occupying that surface would be petty in an exterior; but, being close to the eye, and in comparison only with small objects, their small dimension is forgotten, and they stand upon their merit of delicacy and not of scale and force. It is the imagination which gives them importance; as, in a picture, a figure, 2 inches high, conveys the idea of a man. The ceiling of the Sistine chapel is a remarkable instance of the infinity produced by multiplicity of objects. In architecture it is a constant practice to place small columns in a room upon the ground, so that half their height is constantly hidden by the people, and their proportion destroyed; but, if placed upon a pedestal, and so lessened in magnitude, they may still have scale given to them by contrast.

St. Peter's fails in producing upon the imagination the full effect of its vastness, from the want of subordinate architectural features to give scale to the leading ones.

Panelling is a means of giving scale, and at the same time proportion; but mere subdivision without ornament, to give value to the broader surfaces, is insufficient.

Lovers of antique decoration must regret the timidity of our decorators in use of string colour, and deplore the constant repetition of white and gold drawing-rooms, and indurated fog (called neutral tint), dining-rooms. Nothing but considerations of expense can excuse our whitewashed ceilings unrelieved by a particle of colour. The light so much required in our London climate would hardly be lessened by the introduction of some ornament. In the last century there was a splendid system of putty ornaments modelled by hand, but this has disappeared. Why should we not make use of the beautifully printed flowers, which are so cheap in bands, borders, &c. upon ceilings, care being taken that strong colours shall not be so isolated as to come down upon the eye? Much may be done to give interest, height, proportion, and colour, to a room with the materials found in a paperhanger's shop.

Having then laid before you some examples of the practice of the ancients in colouring their exteriors as well as interiors, I would conclude by reminding you that though this is the last and accessory branch of architecture instead of the first, still the vast interest and delight that it communicates, both to monumental and domestic buildings, claims our attention as architects; and, though we cannot pretend to follow all its practical details, we should be judges of it. The names of B. Peruzzi, Giulio Romano, &c. &c. have come down to us as combining this with the higher functions of art; but, in these times, when the distinction between architects and painters is more marked, let us hope that painters of talent will give their attention to this subject, and this school no doubt has produced and will produce many.

FREDERICK P. COCKERELL.

* λιθος λυχνιτις quarried by torchlight, and therefore very expensive.

* ποικιλος many-coloured, adorned, of various colours.

MONUMENTS AND MEMORIALS.

Brass to late Bishop of Gloucester and Bristol.—A monumental brass, in memory of the late Dr. Monk, has recently been placed in the north aisle of Westminster Abbey. It was executed by Messrs. Hardman and Co. of Birmingham, from a design by Mr. Scott, and consists of an effigy of the late bishop, under a canopy. Springing from the canopy, on each side, are pedestals with angels standing on them, bearing inscriptions. The whole is let into a slab of black Galway marble, 8 feet long by 3 feet 6 inches wide.

Wedgwood Memorials.—A sort of controversy has been going on as to the proper site for a Wedgwood memorial. Burslem, however, was not only Wedgwood's native town, but the Burslemites were the first in the field. Nevertheless, they

have been asked to give up their idea and unite with others who have subsequently projected an obelisk in another locality. The Earl of Carlisle is to head a public meeting of the Burslem people in support of a memorial building in Wedgwood's native town, to be called the Wedgwood Institute.

Tablet at Carlisle to Musgrave Watson, Sculptor.—A monumental tablet is about to be erected in Carlisle Cathedral in memory of a local sculptor. The tablet is of marble, with a medallion likeness surmounted by a sculptor's implements, and an inscription in gilt letters explains its object. Mr. George Nelson, a local sculptor, and for many years the deceased's assistant, sculptured the memorial.

Glasgow Monument to Sir Robert Peel.—The committee of subscribers who were authorised to select a site for this monument, which is now being cast in bronze, after a model by Mr. John Mossman, have decided, subject to the approval of the proprietors, to erect the monument at the north-west angle of George-square, corresponding with the statue of James Watt. It is said the erection is delayed for want of marble for the pedestal, but with what truth we cannot say.

The Forglen Monument, Banffshire.—A monument was recently erected in the grounds of Forglen House, to the memory of the late Sir Robert Abercromby, Bart. of Birkenbog, &c. and his two soldier sons. The work has been executed by order of the Dowager Lady Abercromby. It is of white marble, in the Gothic style, standing on an octagonal base of grey granite, and about 25 feet in height. It consists of an octagonal tower o: shaft, surmounted by a crown of light tracery, and a spire with carved finial. The inscriptions which occupy the lower part of the shaft are in a great measure protected from the weather by a projecting arcade, supported on slender columns; and in the spandrils above are different sculptured devices, amongst which the Scotch thistle and the winged heart, the crest of the Douglas family, are the most prominent. On the front are the arms of the Birkenbog family, and underneath the inscription. The monument is surrounded with wrought-iron work. The entire work is from the house of Mr. M. W. Johnson, sculptor, London. Mr. M. Hawkins Johnson designed and superintended the whole.

The Hardinge Statue at Calcutta.—The statue of Lord Hardinge is now on its pedestal, and is the first equestrian statue ever erected in Calcutta. It was not opened to the public as statues are at home, for no boarding enclosed it, nor did even a rope offer the semblance of a barrier to spectators.

SCHOOL-BUILDING NEWS.

Northam (Southampton). — Christ Church National Schools, Northam, Southampton, have been opened. The schools are arranged upon the plan of the letter L, and will accommodate about 200 children, boys and girls, with class-rooms, &c. for each sex. The large rooms, each 51 feet 3 inches by 18 feet, are capable of being thrown into one should occasion require, and are separated by sliding doors. Attention has been paid to ventilation. The elevation of the schools and residences is of the plainest character, common bricks for the walls being the only material at the disposal of the architect, varied colours of which have been sparingly used: this circumstance, with setting the windows in double reveals, and the introduction of a simple bell-cote on the north gable, are the only architectural features the buildings can claim. The works have been carried out by Mr. Bull, contractor, from the designs and under the superintendence of Mr. James L. Pedley, of Southampton, architect.

Madeley Wood. — The Fletcher Memorial Schools, at Madeley Wood, have been opened. This memorial building, the foundation stone of which was laid a few months since by the Mayor of Birmingham, has been completed by the contractors, the Messrs. Nevett, of Ironbridge, after plans furnished by Mr. J. Wilson, F.S.A. of Bath, architect. The building comprises a school and class-room, with offices, and a master's residence. It is in the Early English style, of bricks of a light coloured ground, interspersed with bands and patterns in red, white, and blue, and has an open-worked bell turret at the north-west angle. The main roof is high pitched, and covered with ornamental bands of coloured tiles, and with ventilators, of a trefoil pattern, inserted. The building presents three principal aspects—north, north-west, and south: the latter embraces the gable forming the master's residence, in which is an oriel window, and two others of an ornamental character. The interior of the building consists of an infant schoolroom, 40 feet by 20 feet; and a class-room, 18 feet by 24 feet, both rooms having galleries at each end. The roof is ceiled; leaving visible, however, the chief timbers, which are stained oak, and varnished. The cost of the building is about 400*l.*, part of which sum is obtained by Government grant, and the rest by subscription, &c. The school is intended solely for the use of infants, and will be supplementary to the adjacent day-schools.

Sheffield.—Hathersage schools, which have been built from designs by Messrs. Weightman, Hadfield, and Goldie, of Sheffield, at a cost of between 500*l.* and 600*l.* have been opened. There are a boys' and girls' school, and a class-room, and the Elizabethan style of architecture has been adopted.

STAINED GLASS.

Lydiard Tregoze Church.—A memorial window has lately been erected in this church, representing the ascension of our Saviour, executed by Mr. A. Gibbs, of London. It is the gift of the Misses King, in memory of their brother, the late Mr. John King, of Blagrove.

Church of Hinton St. George.—A window in the private pew of Earl Poulett, in Hinton parish church, has just been filled with stained glass, as a memorial to his lordship's four deceased children. The window is in the Perpendicular style of Gothic architecture, and the design and colouring are in conformity with that style. The window is divided by mullions into four lights, and the tracery in the head is thrown into twenty-four openings. The arrangement of the design is as follows:—The upper portions are filled with foliated work, and the lower with angels and ornaments. The four principal compartments are subjects from the life of David, all surrounded with canopies and columns on pedestals. The subjects are as follow, beginning from the left hand:—Samuel anointing David; David before Saul; David returning with the Head of the Philistine Giant; David crowned King. The work was designed and executed by Mr. Charles Gibbs, of London.

Leigh Parish Church.—The lower window of this fine old church has just been restored and filled with stained glass. It is a four-light window, and contains the effigies of the four Evangelists, with their symbols, &c. In the centre of the tracery appears our Saviour, and on either side angels, with scrolls bearing texts.

Leeds Parish Church.—On 24th ult. another of the windows in the south ante-chapel of this church was filled in with a stained glass window, executed by Mr. Warrington, of London. The window, which has been presented by Mr. John Hartley, as a family memorial, consists of tracery, with six openings beneath it, each containing a subject, and subdivided by a transom. On the middle of the centre opening is inscribed "Jesus wept;" on the right of this, "The Master is come, and calleth for thee;" on the left, "Father, I thank Thee that Thou hast heard me." The lower tier contains three other subjects:—"Occupy till I come;" "He also gained other two;" and "Well done, thou good and faithful servant." These are all enclosed by columns, which support tabernacle work, which, in the upper one, resolves itself into niches, the centre containing "St. Anne teaching the Virgin;" right and left, "St. John the Baptist;" and "St. John the Evangelist." The tracery is filled with angels bearing scrolls, inscribed "Lord Thou hast been our refuge from one generation to another." Pedestals occur beneath each subject, on which appear mortuary records.

Outwood Church.—A stained-glass window has been presented to the Church of St. Mary Magdalene, Outwood, near Wakefield, by Robert Hudson, esq. of Roundhay, one of the principal coal masters in that district. The work has been executed by Messrs. Hardman and Co. of Birmingham. In the head of the window is a medallion of Christ on the cross, and in the four lights are representations of the tempation of Eve, the expulsion from Paradise, the baptism of Christ, and the temptation of Jesus in the Wilderness, the whole window being intended to represent the Fall and Restoration of Man.

Madras Cathedral.—The windows of this edifice are being filled with painted glass. Twenty-three windows have already been sent, and sixteen more are now on hand. The whole commission has been entrusted to Messrs. Lavers and Barraud, of London.

THE NINE HOURS MOVEMENT.—A very numerously attended meeting of members of the building trades was held in Exeter-hall on Wednesday evening last, when various resolutions were passed, which we will give next week.

PROCEEDINGS UNDER BUILDING ACT.

EXEMPTED BUILDINGS.

HISCOCKS, D.S. *v.* BLACKBURN.

Sir,—I beg to state that the opinion of Mr. Ingham, P.M. (see p. 48, *ante*) has been acquiesced in: the case was left adjourned till yesterday. There is a type error in the report of the case in your Journal of the 15th instant, which renders it rather difficult to read.*

The wooden building will have to be built in accordance with the rules of the Act. I did not oppose another district surveyor being present in court as a witness, not wishing to excite the slightest appearance of any feeling in the matter, or I should have requested that witnesses should be ordered to withdraw; in fact, I looked upon the district surveyor as *in loco parentis*; but I most strongly protest against his freedom of speech in alleging that district surveyors construe the Act after his sense. This is very far from being the fact, and I could have brought a host of district surveyors and legal men who adopt the decision given by Mr. Ingham, and who have expressed themselves very strongly on the unseemly appearance of one officer opposing another, which certainly should be avoided as much as possible.

A. J. HISCOCKS.

Books Received.

Who Invented the Locomotive Engine? with a Review of Smiles's "Life of Stephenson." By OSWALD DODD HEDLEY. London: Ward and Lock, 158, Fleet-street. 1858.

No one man invented the locomotive. George Stephenson, we have always said, was the maturer of the locomotive; but not its sole inventor. The purpose of this volume is to disclaim Stephenson's title to be regarded as the inventor of the locomotive, and especially as the discoverer of the fact that friction of the smooth wheel on the smooth rail sufficed, and that hence toothed wheels and rails were not needed; and while so disclaiming Stephenson's title, to substantiate the claims of Mr. William Hedley, the father of the author, and who was a viewer and manager of Wylam Colliery at the time when Stephenson was engaged with his locomotive experiments at Killingworth.

It does appear that Mr. Smiles, Stephenson's able biographer, is wrong in claiming for Stephenson the original discovery of the fact that friction sufficed for the movement of the engine wheels on the rails and the traction of trains thereby; for this discovery was made about a year before by William Hedley; and as Stephenson had an acquaintance at Wylam Colliery whom he occasionally visited about that time, he had an obvious opportunity of knowing this to be the fact. Hedley himself, however, can no more be justly called the inventor or originator of the locomotive than Stephenson; and in 1836 he admitted the merits of the latter as one who had done much for the locomotive,—that is, as its maturer. Hedley's employer, Mr. Blackett, had first of all applied for a locomotive to Trevithic (who had a better title than either Hedley or Stephenson to be called the originator or inventor of the locomotive, and yet he had abandoned it in despair, or rather from a flighty disposition to cast aside inventions after exhausting their novelty); and Trevithic actually sent one north to Mr. Blackett; so that in all probability Hedley only improved upon Trevithic, as Stephenson upon Hedley. Blenkinsopp, also, is a name claiming some merit in the matter of the locomotive, for he actually set it a-going, though with toothed wheel and rail, and Stephenson had also the advantage of seeing and improving upon Blenkinsopp's as well as Hedley's, and perhaps Trevithic's. But all that does not detract from Stephenson's claims as the maturer of the locomotive. It is a pity, however, that Mr. Smiles should have done injustice to Hedley in attempting to claim for Stephenson more than suffices either for his immortalization in connection with railway locomotion, or for an impartial exposition of the actual facts of the case.

Miscellanea.

ARCHITECTURAL INSTITUTE OF SCOTLAND.—At a meeting of the Architectural Institute of Scotland, held in George-street Hall, Edinburgh, on Monday, the 17th instant, a paper "On Cottages for Rural Labourers," by Mr. William Chambers, of Glenormiston, was read, and elicited considerable discussion.

PRESERVATION OF STONE.—We have received a letter from M. Szerelmey in reply to Professor Ansted, asserting that the composition he is now using "has been invented more than a quarter of a century," and "has never been patented." In justice, however, to other inventors, we are forced to decline inserting it except as an advertisement.

* Through an accident after going to press, the eight bottom lines of the column are placed in the middle of the notice, commencing at the thirteenth line from beginning.

SECURING CEILINGS.—A patent has been taken out for securing the plastering of ceilings and walls. The object is to cause the first layer of plaster to adhere as firmly to the laths as the second layer does to the first, and for that purpose it consists in applying to the joists or grooves, or to a ceiling of boards, laths having inclined edges forming an angle with the horizontal plane of the floor, to which the mortar is to be applied, and spread on in the usual manner, so that the tongues of mortar which pass between the interstices of the laths form an angle with the horizontal plane of the floor, and overlap the tops, and are clinched thereto, whereby the mortar is held and prevented from falling.

ANCIENT BRICKMAKERS.—The walls of Babylon were built of large bricks cemented together with a kind of "glutinous slime" found in the country, which was superior to any lime, and grew much harder than the bricks themselves. The earth which was dug from their ditches served to make the bricks for their walls. The slime was a species of bitumen. Another very durable brick, in these days, was made as follows:—Clay, two parts; chopped straw, one part; thoroughly dried in the open air, then heated red hot, and quenched in hot water containing flour (or gluten) boiled down to a thin starch.—J. B. N.

THE ROMAN WALL.—Mr. Maclaughlan has completed his surveys of the Roman wall and of the Watling-street north of Pierce-bridge, in Yorkshire, undertaken by order of the Duke of Northumberland, who has also had the plans of the surveys, the castra upon the line of the wall, and along the Watling-street, engraved in the first style of art. A few years since his Grace proposed to the president of the Society of Antiquaries (Lord Mahon) to pay the entire expenses of a complete investigation, not only of the great wall, but also of the stations along the course, which have yielded some hundreds of inscriptions, but which have never yet been fully excavated. At the head of these proposed and costly researches the Society of Antiquaries was to stand. This munificent offer was declined by the president!

MEANS OF ESCAPE FROM A BURNING HOUSE. Sir,—When a fire does take place in a dwelling, in general the staircase, being of wood, goes early: means of escape are thus cut off: the inmates can neither get down to the street, nor up to the trap-door, so as to get on to the roof of the next house. Allow me to suggest to builders and others the having not only iron joists and flooring, but also stairs made of cast iron. The one end of the steps may be inserted into the wall when the house is being built: the other end of the steps may be made fast in an upright square or round iron pillar, going from the ground to the top of the house. Stairs so made might have carpeting on them, and the steps may be made highly ornamental, as beautiful patterns can be now produced from cast iron. Eyes for the stair carpet-rods may be made in the steps when cast.—P. W.

NURSERY BUILDING FOR SOLDIERS' CHILDREN AT CHATHAM.—A large building erected at Chatham, on ground given by the Government, has just been opened as a nursery and school for the infant children of the troops belonging to the Chatham garrison. The establishment has been built at Brompton, adjoining the Royal engineer barracks and the barracks occupied by the troops of the line, and has been raised by subscription, collected chiefly by the Rev. D. Cooke, the incumbent of the district. The building will accommodate about 200 children.

MR. SPURGEON'S NEW CHAPEL.—The London correspondent of a provincial journal says:—It has just been decided that it will be advisable to lay the first stone of the new chapel here early in March. The money for the purchase of the ground (5,000*l.*) was paid some time ago. The trustees have now 4,000*l.* in hand, and a rich friend in a town in the west of England has promised the sum of 3,000*l.* The whole sum altogether required is not less than 21,000*l.*; that is, 5,000*l.* for the ground, and 16,000*l.* for the chapel and schools; so that 12,000*l.* remain to be collected, of which, as mentioned above, 3,000*l.* are promised.

PRESERVING TIMBER FROM DECAY.—The following plan is said to be common in Burgundy, for preserving timber from decay and from insects:—The wood having been steeped for forty-eight hours in a solution of copper—in the proportion of one kilogramme (about 2 lb. 3 oz. and 4 drachms) of sulphate of copper to 20 litres (about one quart) of water—must be allowed to dry in the shade, after which wash lightly with lime. If it does not acquire a bluish green colour, the operation must be repeated. This plan, it is said, is economical, and has been tried with success on fifteen different kinds of wood.

NEW RAILWAY STATION FOR DUDLEY.—The inconvenience of the present badly-constructed railway station has induced the Oxford, Worcester, and Wolverhampton Railway Company to resolve on having a new and commodious station. The South Staffordshire Railway Company have a joint interest in the station, and negociations have been pending for the erection of a joint station; but failing any satisfactory arrangement, the Oxford company have determined to erect a building for their own exclusive use, at a cost of upwards of 4,000*l.* The foundations have been taken out.

FALL OF MORE BUILDINGS.—A warehouse and iron foundry, at Southwark, fell on Saturday last. At the extreme end of Bankside, in the narrowest part, is a thoroughfare leading to St. Mary Overy's Dock; and, nearly facing Barclay and Perkins's Brewery, is a range of buildings used as wharfs and warehouses, amongst which were the extensive premises known as the Bank-end Wharf, the property of Messrs. Archer and Sons, millers and wharfingers, and the premises known as the landing wharf and iron foundry, belonging to Messrs. Stephen Carey and Co. The first-named building was erected as long since as the time of Queen Elizabeth, and rested against the eastern wall of the foundry of Messrs. Carey. It contained many hundred quarters of corn in sacks. All of a sudden the persons employed in Messrs. Carey's works noticed the wall that separated the two wharfs bulging, and then the whole length of the western wall, shot out, causing the roof to part in three places, carrying with it about one-third of Messrs. Carey's foundry. No life was lost.——On the same day in Harpur-street, Kent-road, another building fell. This was an extremely old building. Two men and two horses were buried in the ruins. The men were got out seriously injured.

THE GLASGOW BRICK AND BUILDING TRADE IN 1858.—The trade during the past year was very brisk, owing to the great and increasing number of buildings going forward in every quarter of the city and suburbs. In consequence of the facility and despatch with which bricks are now manufactured by machinery, and the duty besides being taken off, their price is much lower than formerly. At present the current price is from 20s. to 22s. 6d. per 1,000 at the works. The pottery and drain-pipe trade and works are kept in constant operation, having good demands both for home consumpt and exportation. No building is erected, of any description whatever, without pipe-drains being put around the foundation, for preventing wet and damp. There appears to have been quite a mania for building here for some time past, which it is now seen was quite uncalled for, and not required by the public. The system, which is now being carried on by speculators in building, of borrowing money and granting bonds over the same, is a very easy way of trading, and encouraging to those mushroom contractors who have so much glutted the market with property and overdone the trade beyond the demand for it. Indeed, to such an unreasonable extent has building been carried on in every quarter and locality, that numberless houses and shops can be seen any day now tenantless and empty.

THE DRINKING FOUNTAIN MOVEMENT.—The *Bristol Times* says,—Should Mr. R. Lang's liberal offer to erect a drinking-fountain opposite the Fine Arts' Academy be accepted and imitated, it is suggested that they be so arranged that the overflow will feed a trough for cattle, and below that again a small dog-trough. This has been so done at Southport, where a gentleman of that place has given the public three marble basins, of good size and design, for that purpose, the commissioners having agreed to supply the water.——One of the series of drinking fountains recently promised to Stockport by Mr. R. H. Greg, of Norcliffe, near Styal, has been erected in the gable-wall of the Weighing Machine, Wellington-road North, opposite the George Inn. The basin and masonry are, we believe, of polished Aberdeen granite, resembling marble. Over the basin is a bronze moulding representing the head of a lioness, from the mouth of which depends the water-pipe. On each side the basin hangs a strong iron ladle, secured to the wall by a chain of sufficient length to reach to the water-pipe. The fountain is not yet in actual operation. Workmen are employed in the erection of another at the top of Cheapside, conducting from Hillgate to Waterloo, which will be similar in design and workmanship to that described.——Mr. Bryant, a gentleman of Plymouth, has offered to provide six drinking fountains of Devonshire marble, and three cattle-troughs of iron, or other suitable material, if the corporation will give the sites and lay on the proper supply of water free to the public. Such liberality is commendable, and worthy of the cause.

INTENDED NEW HOTEL.—It has been decided to establish a new hotel in Leeds, at a cost of 50,000*l.* This amount will be raised in shares, of which the Midland Railway Company take one half.

HEATING CHURCHES.—An apparatus has just been erected at St. Peter's Church, Clifton-wood, for heating it. The apparatus consists of a large descending stove lined with Stourbridge burs, placed in the school-room under the church. From this stove the heat is conveyed to five ventilators in the floor of the church through as many pipes, these pipes being covered with hair-felt, to prevent the cold atmospheric air counteracting the hot air contained in them, so that the whole volume of hot air may proceed uninterruptedly into the body of the church, and diffuse itself throughout the entire building. The apparatus was constructed by Mr. A. A. Harris, of the Marsh-street Iron Works.

RAILWAY DIVIDENDS. — London and North WESTERN.—We hear that the dividend for the past half-year will be at the rate of 4½ per cent. per annum, with a balance of about 20,000*l.* over. Great Western.—It is stated, but we know not how far correctly, that the dividend will be at the rate of 2 per cent. per annum. South Eastern.—The dividend, it is believed, will be 15s. per share, or 5 per cent. per annum. For the corresponding half-year of 1857, the dividend was 14s. per share. Brighton.—Very little doubt is entertained about the dividend of this company being at the rate of 7 per cent. though very large charges are made against revenue, which, by the practice of other companies, would be placed to capital.—*Herapath.*

PARISH RATING OF WATER, GAS, AND TELEGRAPH COMPANIES.—The Board of Governors and Directors of the united parishes of St. Andrew, Holborn, and St. George the Martyr, have increased the assessment on the pipes of the New River Company laid in the parish from 650*l.* to 5,000*l.* and are instituting inquiries preparatory to making a similar increase in the assessment of the pipes of the gas company laid in the parish. They have also resolved to assess the wires of the Electric Telegraph Company laid along Holborn—from Holborn-bars to Fenwick-court—at the sum of 100*l.*; the wires not having hitherto been assessed.

SOME OF THE REQUISITES FOR CEMETERIES.—At a recent meeting of the Liverpool Architectural Society, Mr. T. D. Barry pointed out the leading features required in the laying out of cemeteries, which were—that they should be at such a distance from towns as that no great expense would be incurred in reaching them, but not so near as to allow the possibility of any effluvia arising that would be injurious to the inhabitants,—not nearer than a quarter of a mile, nor further than two miles, would be about the distance; that a dry sandy soil was the most desirable, and that a cemetery should occupy a high site, with a view to keep it dry and to favour the drainage; and, as a general rule, the size might be about half an acre to every 1,000 of the population. Mr. Barry illustrated his views by a reference to various cemeteries in different parts of the country, in the carrying out of several of which he had himself been concerned. A variety of details were given as to the cost of cemeteries, and suggestions as to the best mode of their construction.

JOB AND TASK WORK; OR, HOW THE DOCKYARD JOINERS ARE FLEECED.—Under this title a correspondent of the *Devonport Independent* makes a statement of rather a strange description, which merits the attention of the authorities. He says,—The joiners in the dockyard have for some time been working on what is technically called "job and task work," and for several days past have continued to work until six o'clock p.m. On Saturday night last the workmen were in high glee on the supposed good week's wages they had earned, when on being paid, to their utter consternation they were mulcted in 3s. 3d. each man, being simply told by the measurer in a cool official-like manner that they had not done a sufficient quantity of work. This amount at one stroke well nigh swept off the whole of the overtime, and was but another form of saying, "You must work overtime for nothing." If they earn 2*l.* a week they receive only their 1*l.* 3s.; but if their work should be the least particle short it is immediately checked, even down to a fourpenny-piece. It was only the previous week the same men earned 15s. 6d. more than their wages, but they have not as yet received a fraction of it. Another very just complaint is, that the men have no opportunity of knowing whether they have earned their wages or not, as they do not know the scale of prices paid. The prices are carefully preserved in official obscurity.

"BOLO."—Bole, mentioned in your notice of Mr. Waring's book, as one of the materials used by the old Italian artificers for inlaying with (p. 21, *ante*), is an earth for thickening, solidifying, and colouring the mastics or resinous matters for filling the incisions.—J. B.

LECTURE BY MR. LAYARD AT READING.—Mr. Layard having long since promised a lecture to the people of Reading, and having been sedulously reminded of his promise, at length arranged a time, and left the subject to the Reading Literary and Scientific Institution, who named the Assyrian discoveries. Mr. Layard, therefore, addressed a meeting on this subject last week, remarking, however, that he feared the topic was now rather stale, having himself already published all about these discoveries. The lecturer, nevertheless, produced a very interesting discourse on the subject. Every seat was occupied by an attentive audience.

"LONDON WALL."—As I was lately passing down Hart-street, Cripplegate, for the purpose of viewing the fragment of the old City wall there, laid open by the clearing away of some houses, I was much horrified to see that a large piece had been broken down in the middle, the stones of which lay scattered about the place. Through the opening there was a large hole visible in the adjoining house, apparently part of a cellar. I think that the inhabitants of our City ought to be made acquainted with this circumstance, and I trust that the City will not allow these interesting fragments of a structure of so much importance in its history to be destroyed at random. At all events, I feel sure that the lovers of antiquity will not look in vain for the active and powerful intervention of the *Builder*.—S. B. B.

THE "GREAT EASTERN."—The preparations necessary for fitting this vessel for sea have at last been decided on, and it is stated that in the course of another fortnight or so an army of workmen will be busily engaged in all parts of the ship, inside and out. For various economical reasons, it is considered better that the work of finishing her should be divided between three separate contractors. The contracts have not yet been finally entered into. To one person will be entrusted the ironwork still requisite in the hull and in the construction of the poop and masts, while separate contracts will provide for the rigging and sails and the cabin fittings and joiners' work. It is stated that the long-expected first trial trip will take place about the middle of July. The way, however, in which the affair has been mismanaged up to this time will make all cautious in indulging expectations.

NEW ADELPHI THEATRE.—Mr. Webster has produced a melo-drama, called "The Borgia Ring, a legend of Stonehenge," by Mr. Angiolo Slous, the accomplished author of several well-known plays, wherein the manager plays the villain of the piece, Piers Wenlock, with his accustomed force and discrimination. The comic element, Mr. Toole being the exponent, rather overrode the serious on the first night, less from the author's will, we venture to say, than the opinion of others, but this has probably been remedied. Mr. Slous has chiefly shown himself, as we know him from his previous works, in the delineation of the character of Mabel Daventry, a high-minded maiden, preferring to sacrifice her own happiness rather than bring loss to the object of her love,—a part well played by Miss Woolgar. The principal business of the piece takes place amidst the masses of Stonehenge, seen in the first act by moonlight, and in the second after a snowstorm enwreathed with drifts.

HOUSE DRAINAGE UNDER COMPULSION.—You have recently inserted some communications in reference to house drainage that must entirely settle the question of the necessity of the abolition of cesspools—as far as health is concerned—to the occupiers of house property; but in doing a great good, or even advocating the same, it should be borne in mind to do as little hardship as possible. In my experience I have found several widow and maiden ladies who for years had received from their agents a regular income, and on which they depended to make their payments, but which has been of late not only withheld, but from the heavy expenses from notices to repair, to cleanse, and to drain, have been compelled to mortgage property and reduce their domestic expenses to comply with the law, and in many instances it would have been to their advantage to make a present of their interest in the house to the complaining tenant. In making these observations, I deny not the importance of the question of improved house drainage, but argue that the work is one of progress only, not to be done by the fairy wand.—

HENRY SWEETMAN.

REPEAL OF THE PAPER DUTY.—The eighth annual public meeting of the Association for Promoting the Repeal of the Taxes on Knowledge will take place at Exeter Hall, on Wednesday, 2nd February, to petition for the repeal of the paper duty. The Right Hon. T. Milner Gibson, M.P. in the chair. An effort must now be made in earnest to get rid of this most injurious impost and absurd anomaly. We profess to desire to extend knowledge, and we interpose a heavy tax to prevent it.

HEYWOOD AND DIXON'S KNOBS AND HANDLES.—These knobs and fastenings (of wood), for which a patent was obtained in 1856, are so much superior to those of ordinary form, that they only require to be known to be largely adopted. To point out the principle broadly,—a hole is drilled through the door or drawer front, and the knob is secured by a wooden screw, the head of which is *inside* the door.

APPLICATION OF SEWAGE.—The Royal Sewage Commissioners have re-commenced their labours in Manchester this week. It is their intention to examine thoroughly the tributaries to the river Mersey, embracing the Irwell, Medlock, Rock Irk, &c. and to take samples of the waters above and below each town and group of towns. The members of the commission now at work are Messrs. Laws, Way, Austin, and Robert Rawlinson, C.E.

PHOTOGRAPHIC PROGRESS: THE DISCOVERIES BY A HOUSE-PAINTER.—Mr. John Pouncy, of Dorchester, having discovered a carbonic process whereby permanent photographs, it is said, are produced, has given an account of his discovery in person before the Photographic Society of London, when a long discussion followed, leading, it seems, to a much more favourable idea of Mr. Pouncy's process than had previously been entertained. The *Dorset Chronicle*, in giving an account of these proceedings, informs its readers that Mr. Pouncy is a house-painter and decorator in Dorchester, and hints that it would be only right in the Dorset people to encourage in his business so enterprising and original an investigater, especially as he is considered to be a first-rate tradesman, which one can readily believe.

DRAINAGE AND SCARLATINA.—Four deaths from scarlatina occurred within eighteen days in a family in Round-tree Cottage, Bow. The Registrar-general, in his last report, states that "the disease is attributed by the father to a black ditch flowing at the back of the house. He called the attention of the Poplar District Board of Works to the nuisance last summer, but the only answer that he received was, that probably the Metropolitan Board of Works would at some future period bring a sewer near the premises. It may well be doubted whether this intimation of good intentions and of their probable fulfilment will supply balm to the wounds of the afflicted family."

SEWERAGE OF READING.—The surveyor of the Reading Board of Health, Mr. J. G. B. Marshall, C.E. has, at the request of the board, made a report on the best plan for carrying out a more perfect sewerage of the borough. The report, which has been printed, states that the cost of the plan recommended would be considerably under 10,000*l.* and require a rate of only 2¼d. in the pound to repay it in thirty years. The surveyor states that he has received a written offer from responsible persons in the town, who are prepared to take or lease for fourteen or twenty-one years, the whole of the sewerage when collected at the two outfalls, and to deodorize the same, paying the board a rent after the rate of ten per cent. per annum on any sum not exceeding 1,000*l.* which may be expended in works for collecting the sewage, such as tanks, sheds, &c. with lifting apparatus. The sewerage scheme, however, is worked out without reference to any such offers, although it is stated to be easy on that scheme to construct deodorizing works at the outfalls, and with advantage to the inhabitants.

TENDERS.

For the Lion-walk Chapel, Colchester. Mr. Charles Forster Hayward, architect:—

	Net amount, exclusive of old materials.
Simpson, London	£3,970 15 6
Gibbons, Ipswich	3,895 0 0
Evans, Brothers, London	3,214 0 0
Saunders, Dedham	3,170 0 0
Lee and Baker, and Shepherd, Colchester	3,164 0
Grimes, Colchester	3,100 0 0

For alterations to 17, Change-alley, Cornhill, for Messrs. Harper, Burne, and Co. Mr. A. W. Blomfield, architect. Quantities supplied by Mr. J. A. Bunker:—

Hardiman and Sandon	£548 0 0
Turner and Sons	543 0 0
Fowler	494 0 0
Child, Son, and Martin	485 0 0

For schools and master's house, at Marden, Kent. Quantities furnished by Mr. B. A. C. Herring:—

Stevens	£1,452 0 0
Sutton and Walters	1,447 0 0
Barnes	1,410 0 0
Wallis	1,375 0 0
Peerless and Hartridge	1,365 0 0
Constable	1,350 0 0
Eldon and Warren	1,346 0 0
Sutton and Vaughan	1,317 0 0
Pannett	1,275 0 0
Hooper and Sons	1,225 0 0

For building small chapel vestry offices at Fishponds. Quantities not supplied. Mr. Henry Masters, architect:—

C. King	£390 0 0
J. Williams	355 0 0
W. Smith	251 0 0
J. Eastabrook	248 0 0
J. Lambert	237 0 0

For house, stabling, and offices for Mr. E. Frith, Wandsworth. Mr. H. Currey, architect. Quantities by Messrs. Welch and Atkinson:—

Haward	£3,046 10 0
Lucas, Brothers	2,376 0 0
Aviss and Sons	2,356 0 0
W. Higgs	2,300 0 0
Downs	2,246 0 0
Nicholson and Sons	2,200 0 0

For building dwelling-house and shop, No. 120, Leadenhall-street, City, for Mr. Langlois. Mr. G. Marsh, Architect:—

Thompson	£945 0 0
Marsland	890 0 0
Woodward	885 0 0
Downs (accepted)	869 0 0

For rebuilding party-wall, and sundry repairs to the Hercules Tavern, Leadenhall-street. Messrs. Young and Son, architects:—

Piper and Son	£187 0 0
King	147 0 0
Turner and Sons	139 0 0
Axford and Co.	131 0 0

For chapel, at Plaistow:—

	Main building.	Totals.
Brass and Son	£2,963 0 0	£3,971 0 0
Hack and Son	2,731 0 0	3,754 0 0
J. and W. Sanders	2,670 0 0	3,712 0 0
Ashby and Son	2,450 0 0	3,477 0 0
Piper and Son	2,330 0 0	3,302 0 0
Conder	2,375 0 0	3,298 0 0

For the Grammar-school, Bedford. Mr. J. Horsford, architect. Quantities supplied by Mr. Hovenden:—

	Ancaster stone.	Additional for Ketton stone.
Heath	£3,775 0 0	£275 0 0
Dounes	3,680 0 0	210 0 0
M'Lennan and Bird	3,659 0 0	75 0 0
Webster	3,548 0 0	—
Mault	3,310 0 0	241 0 0
Lawson and Joy	3,102 0 0	234 0 0
Myers	3,101 0 0	130 0 0
Spencer	2,919 0 0	190 0 0
Harvey	2,905 0 0	165 0 0
Young	2,898 0 0	123 0 0
Fredk. and T. Wood	2,873 0 0	60 0 0
Conquest	2,828 0 0	234 0 0
Freshwaters	2,827 0 0	234 0 0
Reynolds	2,786 0 0	234 0 0
Cooper	2,628 0 0	76 0 0
Masters	2,548 8 0	234 8 0
Lindley, Firm, and Co.	2,524 0 0	321 0 0
Thompson	2,450 0 0	225 0 0

TO CORRESPONDENTS.

Ecclesiastical Dilapidations (the new incumbent is not bound to *wait* till the representatives of a late incumbent appoint a surveyor to act for them, but may proceed to recover the amount of such a claim as he can substantiate).—J. L. (an advertisement).—A. B. T. (thanks).—Sir C. B.—T.—W. M.—R. B. E.—Waterloo-bridge.—W. G.—J. N.—J. T. (we have assented to so many similar applications, that we must now decline).—J. and B.—W. A. (there is no specified distance. The neighbour would have to prove "injury").—A Reader (there is such an arrangement of telescope lamp tubes as renders chains and weights unnecessary, but we cannot refer to it).—Vrin.—Alpha.—H. M.—S. S.—J. K.—T. H. H.—H. P.—C. L. (next week).—G. W. (mentioned last week).

"BOOKS AND ADDRESSES."—We are forced to decline pointing out books or finding addresses.

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